THE

JOURNAL

OF THE

ROYAL GEOGRAPHICAL SOCIETY

OF

LONDON.

VOLUME THE ELEVENTH.

1841

LONDON:
JOHN MURRAY, ALBEMARLE STREET.
MDCCCXLI

LONDON:
Printed by WILLIAM CLOWES and SONS,
Stamford Street

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APPENDIX.

LIST OF ILLUSTRATIONS TO VOL. XI.

ERRATA.

Page lii, *for* Wiltshire *read* Willshire.
— 170, *for* Okuago *read* Oknago.
— 171 &c., *for* Pritchard *read* Prichard.

Royal Geographical Society.

1841.

AT THE

ANNUAL GENERAL MEETING, MAY 24, 1841,

The following Report from the Council was read :—

The Council has great pleasure in being enabled to lay before the Society a satisfactory statement of its affairs.

Since the last anniversary, forty new Members have been elected; sixteen vacancies have occurred, of which nine by death, and seven by resignation; seven elected Members, whose names had by courtesy been placed upon the list, though they had not paid their admission fee, have been struck off, never having paid anything. The Society now consists of 714 Members, exclusive of sixty-three, Foreign Honorary and Corresponding Members. One Foreign Corresponding Member has been added to our list since the last anniversary, namely, the Viscount de Santarem.

Finances.—The state of the finances, of which the details are annexed, continues satisfactory. The sum of 350*l.* has been sold out of the funds in order to defray the extraordinary expenses incurred for the necessary preservation and arrangement of the Society's valuable maps and charts, leaving the sum of 4150*l.* as the capital stock invested in the funds.

A farther sum of 300*l.* for the Kurdistán expedition has been paid out of the annual receipts without encroaching upon the Society's capital.

Arrears.—The arrears due to the Society on the 1st of January amounted to 678*l.*; 157*l.* have since been recovered; 66*l.* are

cancelled by elimination of the seven members above mentioned, who should not in strictness have been considered members, never having, by their presence or payment of admission fee, sanctioned their election; and 176*l.* are considered as irrecoverable, being the arrears of thirteen defaulters, whose names, in conformity with the regulations, are suspended in the Society's rooms: still leaving 279*l.* in arrears; but as these are chiefly due from members abroad, it is hoped that a large part of this is recoverable.

Her Majesty's Donation.—The plan adopted by the Council last year, of converting her Majesty's donation into two gold medals of equal value, has been followed this year, and will continue to be so in future. The Council has awarded the Founder's Medal to Lieutenant Raper, R.N., for his excellent work on Practical Navigation and Nautical Astronomy, and for his very valuable papers on Longitudes in the 'Nautical Magazine;' and the Patron's Medal to Lieutenant Wood, I.N., for his journey to and re-discovery of the source of the Oxus, and for his valuable labours on the Indus.

Resignation of Secretary.—The Council, in announcing officially the resignation of Captain Washington from the office of Secretary to the Society, do so with regret, and conceive it to be their duty thus publicly to record the high sense they entertain of the unwearied zeal he has ever displayed, and of the valuable services rendered by him to the Society. To his enlightened and unceasing activity must be ascribed in no ordinary degree the great advance which the Society has made in securing the confidence and good opinion of the public, and the increasing interest which is now so extensively felt in geographical discoveries and investigations. He has lately been appointed to the command of one of her Majesty's surveying vessels in the North Sea; and while every one will admit that the selection has been most judicious for the benefit of the service, the Council feel persuaded that the Society will join with them in congratulating Captain Washington on his appointment, and in anticipating with pleasure the success which his talents and industry cannot fail to secure.

Publications.—The Journal of the Society, for 1840, has, like that of the preceding year, been issued in three parts; the edition being 1500 copies.

The Council, ever desirous of diffusing the information contained in its publications, has included the Royal Academy of Sciences of Stockholm in the list of scientific bodies to which the Journal is presented.

The Journal of the Society has hitherto been edited by the Secretary; but the particular nature of that publication, requiring much discrimination and judgment in the selection and arrangement for publication of the materials sent home by travellers, renders the task of editing one of extraordinary labour and time; added to which, the extent which the Society has acquired of late, and the consequent increase of official duty, are such, that the labours of editing the Journal and transacting the ordinary business of the Society have become too multifarious to be efficiently performed by one person. Accordingly, on the resignation of the Secretaryship by Captain Washington, the Council resolved to divide the labour between two individuals. The Secretaryship was offered to Colonel Jackson, who has accepted it, subject to the sanction of the Society; and our learned Foreign Secretary, having offered to undertake the labour of editing the Journal without salary, but with an allowance of 100*l.* a-year for such assistance of amanuenses, &c., as he might require, the Council has gratefully accepted the proposal, subject in like manner to the sanction of the Society. In the mean time, the Council think proper to add that the greater portion of the third part of the tenth volume has been edited under the new arrangement.

Expeditions.—The Kurdistán expedition, undertaken under the joint auspices of this Society and of the Society for the Diffusion of Christian Knowledge, and confided to the charge of Mr. Ainsworth and Mr. Rassám, has closed its labours. A detailed report of the second Journey across Asia Minor, from Constantinople to Mosúl, has been printed in the last published Part of the Society's Journal. Mr. Ainsworth's last report, containing his Journey among the Nestorian Christians, has just been received, and will appear in a subsequent Number.

Library.—The accessions to the library consist of upwards of 380 volumes and 290 maps and charts. For a large portion of the latter the Society is indebted to the liberality of the Board of Admiralty.

The Council, desirous of rendering the Society the grand focus of geographical knowledge, are particularly anxious that the library and its collection of maps and charts should be as complete as possible; but to effect this solely from its own funds would be to diminish in a great degree its available means of promoting the other objects for which the Society was instituted; whereas the collective exertions of members would effect much at a very trifling cost to themselves individually. Very valuable geographical works, accounts of travels and of countries, old atlases and maps, highly useful for the purposes of comparative geography, are frequently to be procured for very small sums. By purchasing and presenting such to the library of the Society it might soon be greatly augmented. The object to which on this subject we would tend is, that no work relating to geography, no map or chart extant, should be wanting to the library of the Royal Geographical Society of London; and the Council therefore take this opportunity of appealing to the liberality, and, perhaps, they may add, to the laudable pride of its members. If each one of our 700 members were to present but one volume to the Society yearly, we might hope, in a very short time, to possess almost everything of value to the science we profess to cultivate.

BALANCE-SHEET FOR 1840.

Dr.	£.	s.	d.
Balance in hand, 1st January, 1840	133	18	4
Entrance of 60 Members at 3*l*.	180	0	0
Composition of 26 Members at 17*l*.	442	0	0
Subscriptions of 282 Members at 2*l*.	564	5	0
Arrears paid up	86	0	0
Dividends on Stock (4,500*l*. 3 per Cent. Consols)	157	10	0
Royal Premium	52	10	0
Journals sold	185	1	2
From the Society for Promoting Christian Knowledge on account of the Kurdistán Expedition	250	0	0
Donation of Mr. Vulliamy	8	0	0
	£2,059	4	6

Cr.	£.	s.	d.
House-rent	263	13	0
Salaries	275	0	0
Printing Journal, Vol. IX. 1500 Copies	400	0	0
Kurdistán Expedition	556	13	0
Illustrations for Journal, Vol. IX.	183	10	6
Two Gold Medals	46	0	0
Instruments for Mr. Bowring going to Mexico	5	5	0
Books and Maps	107	5	2
Collector	21	0	0
Messenger	2[illegible]	0	0
Stationery	24	13	9
Carriage of Parcels	9	0	0
Postage of Letters	17	17	7
Expenses of Evening Meetings	15	16	0
Firing and Lights	36	18	0
Insurance, Advertisements, and Power of Attorney	4	6	0
Illumination	10	0	0
Balance in hand, 31st December, 1840	58	6	6
	£2,059	4	6

(Signed for) JOHN BIDDULPH.
ROBERT BIDDULPH.

The above Accounts have been compared by us with corresponding vouchers, and found to be correct.—26th April, 1841.

(Signed) { FRANCIS BAILY.
FRANCIS LOVE BECKFORD.

ESTIMATE FOR 1841.

Dr.

		£.	s.	d.
Balance in hand (1st January, 1841)		58	6	6
Probable Amount of Subscriptions, viz.—				
Entrance of 60 Members	£180			
Composition of 25 ditto	425			
Subscription of 390 ditto	600			
	——	1,205	0	0
Arrears likely to be recovered		200	0	0
Dividends on 4,500*l.* (3 per Cents. Reduced)		158	0	0
Sale of Journal		180	0	0
Royal Premium		52	0	0
		£1,853	6	6

Cr.

	£.	s.	d.
Rent of House and Fixtures	263	0	0
Salaries	400	0	0
Printing Vol. X. of Journal, 1500 Copies	450	0	0
Illustrations of Journal	150	0	0
Kurdistán Expedition	300	0	0
Books and Maps	100	0	0
Royal Premium	5[illegible]	[illegible]0	0
Collector	21	0	0
Office Expenses, including Firing, Lights, Meetings, Stationery, Postage, Carriage of Parcels, &c.	100	0	0
	£1,836	10	0

J. R. JACKSON,
Secretary.

At the Anniversary Meeting held on the 24th May, 1841, the President presented the Gold Medals, awarded respectively to Lieut. H. Raper, R.N., and Lieut. J. Wood, I.N., in the following words.

"Lieut. Raper,—In compliance with an unanimous resolution of the Council I beg to place in your hands the highest tribute to merit which they have it in their power to bestow. This Work on the 'Practice of Navigation, and Nautical Astronomy,' for which the Royal Medal has been awarded to you, indicates in the opinion of the Council a mind naturally powerful, highly cultivated, whose energy has been directed, during many successive years, steadily and without distraction to the attainment of a single object. Your ambition has been to perfect the art of navigation, to remove whatever it contained of empiricism, to lop off its redundancies, to adapt its laws to the dullest comprehensions, and to lay down principles worthy to guide the highest intelligence.

Of those who only follow the Rules, or employ the Tables contained in this volume, no mental effort is required: such persons may read off without hesitation the sign annexed to any correction and comprehend at once what to reserve, what to add, what to subtract; the meaning is clear, the precepts are obvious, and cases hitherto considered complex and involved they will find brought down to the level of the simplest canon.

But the Methods recommended in this work are not only simplified, but often original: as an instance of this it may be sufficient to notice the special Transverse table, so contrived that it bears to spherical the same relation which the ordinary transverse table bears to plane trigonometry. Among the several uses to which the table is applicable, I may cite as one of the most striking, the ready determination of a ship's true course upon a great circle, and the geographic measurement of large tracts of country without the cumbrous machinery of logarithms.

The Formulæ for estimating in observations made under varying circumstances the probable limits of error, form another peculiarity of your work. It is no slight advantage to the mariner or traveller that he is enabled to ascertain immediately and correctly the amount of credit his observations deserve.

Another Table requiring special notice is that of Maritime Positions, no servile copy of former tables bearing that name, but an original composition derived from a critical investigation of authorities, and founded upon principles which you, Sir, had already laid down at an earlier period in an admirable series of papers in the 'Nautical Magazine.' In those papers you discussed the amount of dependence to which different classes of observations are entitled; you pointed out by what gross errors they are not unfrequently polluted; and inculcated the necessity of adopting for different parts of the globe a certain number of what may be denominated secondary meridians.. From these you selected as many as your object required, and earnestly recommended all geographers and all travellers whether by land or sea to refer to one or other of the meridians so selected (eighteen in number) the

chronometric differences of longitude hitherto referred exclusively to the prime meridian of Greenwich.

Such are the leading features of the work before me; such the merits which the Council have felt it imperative upon them to acknowledge and reward. Let it not be said (I am sure it will not be said in disparagement of their adjudication) that it is premature—that the work, however admirable, is incomplete. It is perfectly true that the second volume, embracing the whole theory of navigation, is still in embryo: but I cannot persuade myself that any member of the Society will attach more importance than the Council have done to this remark. When in the course which you have already run, it had been satisfactorily shown that you had surpassed every other competitor, the Council did not consider themselves justified in withholding from you the prize for another year in the hope that within that period you would surpass yourself. Far from discovering in this anticipation of future excellence an excuse for delay, we have on the contrary found in it a reason for despatch: it appeared to us that what justice authorized policy commanded, and that we were called upon by the earliest application of all the encouragement we could offer to stimulate you to proceed with unfaltering energy in the path you have chosen, and which can hardly fail to lead to greater results."

Lieut. Raper, in reply, said:—

"Sir,—I receive this medal with great gratification, and am the more sensible of the distinction, as it has been bestowed upon an unfinished work. I trust that I need not occupy the time of the meeting with expressions of the pleasure which this occasion affords me; I can only assure them that the honour conferred on my work will render me doubly vigilant in completing that part of it which is yet in progress, in order that it may be as little undeserving as possible of the prominent position which they have assigned to it, and also of the encomiums which you have been so good, Sir, as to add to the recommendation of the Council. I will not trespass upon you any further than to observe, that whatever satisfaction an author may derive from conceiving that he has directed his efforts to purposes of utility, or to the advantage of any section of the community, he can have none higher than to find that his labours have obtained the approbation of those to whom the world naturally looks as judges on such questions."

The President then addressed the meeting in the following words, after which, the medal was presented to Sir CHARLES MALCOLM, for Lieut. WOOD, I.N.

"Gentlemen,—It has been already announced to you that one of the medals, which, by command of her gracious Majesty, the Council appropriates annually to the furtherance of geographical science and discovery, has been this year awarded to Lieut. Wood.

Starting into active life at a period when it was thought necessary to reopen between the eastern and western possessions of Great Britain a channel of communication which barbarism had closed during many successive centuries, it was the good fortune of this officer to command the first steam-boat that ever navigated the waters of the Indus.

Being commissioned to examine the periodical rise and fall of the Indus at Haïderábád, the duty was performed by Lieut. Wood in a manner so satisfactory that he had the honour of being appointed soon afterwards to accompany Sir Alexander Burnes on a commercial mission to Afghánistan. While holding that appointment, he undertook a survey of the Indus from its mouth (which had been already mapped with great accuracy by Lieut. Carless) to Aṭṭak, a course of 900 miles. As he approached Kalá-bágh, where the river escapes through a mountain-pass in the salt range, his difficulties increased till they became what by an ordinary mind might have been deemed insurmountable; to his they suggested no other necessity but that of prosecuting his object in a different way. Discharging his boat he proceeded by forced marches to Aṭṭak, the assigned terminus of his labours, embarked again, and steering cautiously amid falls and rapids, down that part of the stream which to ascend was impracticable, by skill, courage, and perseverance, accomplished to the fullest extent his arduous investigation. At Kábul he began to construct a map of the Afghán province of Kóh-Dáman; * while so employed he was ordered off to Turkistán, and having been foiled in attempting to penetrate an unexplored mountain-pass, arrived at Ḳunduz by the ordinary route. The only prospect which now opened to him was that of passing the winter months in inglorious ease; but mindful of an observation, made to him on a former occasion by Sir Alexander Burnes, that it was practicable to combine with the correct discharge of professional duties the advancement of general knowledge, he spurned a life of inactivity, and undaunted by the extreme rigour of the season, and the inhospitable nature of the country which it would be necessary for him to traverse, gained permission from Murád Beg, the ruler of the country, to explore the hidden source of the Oxus: and here again he was successful. In such expeditions success is not an unfair criterion of merit, for in trying circumstances fortune rarely favours the undeserving.

Mr. Wood's Survey of the Indus is a masterly work, and will require but few additions or corrections. His account of the upper Oxus is confessedly very imperfect, but the imperfection arises from circumstances unconnected with his character, and beyond his control; the achievements of travellers must ever be bounded more or less by their opportunities; the first step is rarely the easiest, nor is gratitude less due to him who sows the seed than to him who gathers in the harvest.

The value of the medals given by the Council we are aware depends in no slight degree on the justice and impartiality with which they are awarded, but the choice among different descriptions of merit is always embarrassing. In their conscientious endeavour to fulfil the intentions of the royal donors, the Council have more than once considered themselves not only authorized but called upon to take into account circumstances which, if the 'Detur digniori' were the only rule of action, ought to be disregarded. Our duty is not so much to reward merit, as through the medium of reward to advance geographical science and discovery. The Council, in worthily conferring upon Lieut. Wood

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* Or Dámani Kóh, *i.e.* mountain skirt.

this medal, have therefore not deemed it necessary to shut their eyes to the important benefits which have been rendered to geography by that branch of the Indian service to which he has the honour to belong; still less have they concealed from themselves the consideration that he is yet happily in the prime of life, when a grateful recognition of his past services may naturally be expected to increase his ardour in geographical pursuits, and urge him on to new investigations.

I regret that Lieut. Wood is not present. He is moving about, I hear, in the north of Scotland, and may perhaps be yet unconscious of the honour that awaits him. Under these circumstances Sir Charles Malcolm will do me the favour to accept the medal in trust to transfer it by the first opportunity to its right owner. It will be to an officer of the Indian navy an additional gratification to receive it from his hands.

"Scilicet ingeniis aliqua est concordia junctis
Et servet studii fœdera quisque sui."

Sir CHARLES MALCOLM, in reply, said:—

"Sir,—My young friend, Lieut. Wood, will ever regret that he was not present this evening to receive personally from your hands this mark of the approbation of the Royal Geographical Society. This honourable reward now conferred upon him for the talent, zeal, and perseverance which he has displayed, and which you have been pleased to notice in such a just and gratifying manner, will be to him a recompense for all the labour he has undergone in his successful and arduous undertaking. It will afford me most sincere pleasure to convey to him this medal."

ACCESSIONS TO THE LIBRARY.

27th MAY, 1841.

EUROPE.

Titles of Books.	*Donors.*
BELGIUM.—Essai sur la Statistique Générale de la Belgique. Par M. Vandermaelen. 8vo. Bruxelles, 1841	M. VANDERMAELEN.
——— Atlas Pittoresque des Chemins de Fer de la Belgique. Par A. Wauters. Bruxelles, 1840	IDEM.
BRITISH ISLES.—Guide to the Lakes of Cumberland, &c. By John Housman. 8vo. Carlisle, 1808	G. B. GREENOUGH, ESQ.
——— Essay towards a Natural History of Westmoreland, &c. By Thomas Robinson. 8vo. London, 1709	
——— Mineralogy of Derbyshire. By John Mawe. 8vo. London, 1802	
——— Agriculture of the County of Surrey. By W. Stevenson. 8vo. London, 1809	
——— Agriculture of Middlesex. By John Middleton. 8vo. London, 1807	
——— Agriculture of Gloucestershire. By Thomas Rudge. 8vo. London, 1807	
——— Agriculture of Norfolk. By Arthur Young. 8vo. London, 1804	
——— General View of the Agriculture of Devon. By Charles Vancouver. 8vo. London, 1808	
——— Nautical Observations on the Port and Vicinity of Cardiff. By Captain W. H. Smyth. 8vo. Cardiff	CAPTAIN SMYTH, R.N.
——— Parliamentary Gazetteer of England and Wales. Parts 4 to 7. 8vo. London, 1840	G. G. CUNNINGHAM, ESQ.
A General Account of the Rivers in Great Britain. By H. Skrine. 8vo. 1801	
EUROPE.—Europa; Quadro fisiografico facilmente inteso. Opera. J. C. Schouw. Milano, 1839	COUNT GRÅBERG DI HEMSÖ.
FRANCE.—La France, Description Géographique, Statistique, et Topographique. Par M. Loriol. Six parts. 8vo. Paris	G. H. SMITH, ESQ.
GREECE.—Zur Geschichte der Griechischen und Indoskythischen Könige. Von C. Lassen. 8vo. Bonn, 1838	M. C. LASSEN.
IONIAN ISLANDS.—Della Historia di Corfu, descritta da Andrea Marmora. 4to. Venice, 1672	W. C. TREVELYAN, ESQ.

Titles of Books.	*Donors.*
RUSSIA.—Annuaire Magnétique et Météorologique de la Russie. Années 1837, 1838, et 1839. 4to. St. Petersburg	GEN. TCHEFSKINE.
——— Russland und die Tscherkessen. Von K. F. Neumann. 8vo. Stuttgart, 1840	M. CARL NEUMANN.
SWITZERLAND.—Ergebnisse der Trigonometrischen Vermessungen in der Schweiz. 4to. Zurich, 1840 . .	CAPTAIN MORIER.
SICILY.—Annali Civili del Regno delle Due Sicilie. 4to. Napoli, 1840	COL. VISCONTI.
TURKEY.—Travels in Turkey, Italy, and Russia, 1803 to 1806. By Thomas Macgill. 8vo. London, 1808 . .	SIR W. PARISH.

ASIA.

AFFGANISTAN.—Rough Notes of the Campaign in Sinde and Affganistan, in 1838-39. By Major J. Outram. London. 12mo. 1840	MAJOR OUTRAM.
ASIA.—Erdkunde von Asien. Part 9. Von Carl Ritter. 8vo. Berlin, 1840	PROF. C. RITTER.
—— Asiatic Society of Bengal, Journal of the, to No. 24 N.S. 1841	ASIATIC SOCIETY OF BENGAL.
—— Nouveau Journal Asiatique, to August, 1841. Paris .	SOCIÉTÉ ASIATIQUE DE PARIS.
ASIA, CENTRAL.—Cenni Geografichi e Statistichi su L'Asia Centrale. Par J. Gråberg di Hemsö. 8vo. Milano, 1840	COUNT GRÅBERG DI HEMSÖ.
ASIA MINOR.—Remarks on Ancient Troy and Modern Troad. By Major E. Napier. 8vo. Pamphlet . . .	MAJOR E. NAPIER.
——— Description of the Plains of Troy. By M. Chevalier. Translated by A. Dalzel. 4to. Edin., 1791	G. B. GREENOUGH, ESQ.
ARABIA.—Essay towards the History of Arabia, antecedent to the Birth of Mahommed. By Major Price. 4to. London, 1824	MR. J. HEARNE.
CHINA.—Travels of the Russian Mission through Mongolia to China, 1820-21. By G. Timkowski, with Notes by J. Klaproth. 2 vols. 8vo. London, 1827 . .	G. B. GREENOUGH, ESQ.
—— Notizie varie della China, da Jacopo Carlieri. 8vo. Florence, 1697	W. C. TREVELYAN, ESQ.
CIRCASSIA.—A Residence in Circassia. By J. S. Bell. 2 vols. 8vo. London, 1840	J. S. BELL, ESQ.
INDIA.—Hand-book for India and Egypt. 8vo. Lond., 1841	G. PARBURY, ESQ.
——— Istoria dell' Indie del Vescovo Chiapa. 4to. Venice, 1826	W. C. TREVELYAN, ESQ.
——— Conquesta dell' Indie Occidentale del Vescovo Chiapa. 4to. Venice, 1645	IDEM.
——— Navigationi degl' Olandesi e 'l Zelandesi da Gerardo di Vera. 4to. Venice, 1599	IDEM.
HINDOSTAN.—Travels in the Himalayan Provinces of Hindustan and Punjub. By Moorcroft and Trebeck. 2 vols. 8vo. London, 1841	ASIATIC SOCIETY OF BENGAL.
JAPAN.—Voyage au Japon en 1823-30. Par Dr. P. F. Siebold, traduit par A. de Montry et E. Fraissinet. Tome V. 8vo. Paris, 1840	MR. ARTHUR BERTRAND.
—— Histoire de l'Empire du Japon. Composée en Allemand par E. Kaempfer, et traduite en François par J. G. Scheuchzer. 2 vols. folio. La Haye, 1729 .	G. B. GREENOUGH, ESQ.

Titles of Books.	*Donors.*
KHIVAH.—Descrizione delle Orde e delle Steppe dei Kirghizi-Kazaki, opera dittata in Lingua Russa dal A. Levchine, ora Notomizzata, da J. G. di Hemsö. 8vo. Milano, 1840	COUNT GRÅBERG DI HEMSÖ.
KASCHMIR und das Reich der Siek Von C. F. von Hügel. Vols. I., II., and III. 8vo. Stuttgart, 1841 .	
LEVANT.—Travels of Mr. Thevenot into the Levant. Folio. London, 1687	G. B. GREENOUGH, ESQ.
OXUS.—Personal Narrative of a Journey to the Sources of the River Oxus. By Lieut. J. Wood, I.N. 8vo. London, 1841	LIEUT. WOOD, I.N.
PHILLIPPINES.—Historical View of the Phillippine Islands. From the Spanish of M. de Zuniga. By J. Maver. 2 vols. 8vo. London, 1814	G. B. GREENOUGH, ESQ.
PALESTINE.—Voyage dans la Palestine. Par M. de la Roque. 8vo. Amsterdam, 1718	IDEM.
——— Biblical Researches in Palestine, Mount Sinai, and Arabia Petræa. By E. Robinson, D.D. 3 vols. 8vo. London, 1841	J. MURRAY, ESQ.
TARTARY.—The Natural History of East Tartary. By W. Ratcliffe. 8vo. London, 1789	G. B. GREENOUGH, ESQ.

AFRICA.

AFRICA.—The Negroland of the Arabs, examined and explained by W. D. Cooley. 8vo. London, 1841	W. D. COOLEY, ESQ.
——— The Friend of Africa. A Periodical; Nos. 1 to 12. 8vo. London, 1841	THE SOCIETY FOR THE CIVILISATION OF AFRICA.
——— Grammar of the Susoo Language. 8vo. Edinburgh, 1802	W. C. TREVELYAN, ESQ.
——— Grammar of the Bollum Language. By the Rev. G. H. Nylander. 8vo. London, 1814	
——— A Geographical Survey of Africa. By James M'Queen, Esq. 8vo. London, 1840	JAMES M'QUEEN, ESQ.
——— Outline of a Vocabulary of a few of the Principal Languages of Western and Central Africa; for the Use of the Niger Expedition. 8vo. London, 1841	THE SOCIETY FOR THE CIVILISATION OF AFRICA.
——— Life of Jehudi Ashmun, late Colonial Agent in Liberia. By R. R. Gurley. 8vo. New York, 1835.	R. R. GURLEY, ESQ.
——— Abd-'el-Quader et sa Nouvelle Capitale. Par 'A 8vo. pamphlet. Paris, 1840	M. D'AVEZAC.
ALGIERS.—Tableau de la Situation des Etablissemens Français dans l'Algérie, 1838-39-40. 3 vols. 4to. Paris	GENERAL PELET.
——— Itinéraire du Royaume d'Alger. Par J. M., H. B. 8vo. London, 1830	W. C. TREVELYAN, ESQ.
CAPE OF GOOD HOPE.—A Sketch and Plan of Cradock Pass, between George Town and Graham's Town. By Major Michell	MAJOR MICHELL.
——— Voyage to the Cape of Good Hope, &c., 1772-76. By A. Sparrman, M.D. 2 vols. 4to. London, 1785	G. B. GREENOUGH, ESQ.
EGYPT.—An Appeal to the Antiquaries of Europe on the Destruction of the Monuments of Egypt. By G. R. Gliddon, Esq. 8vo. London, 1841 . . .	G. R. GLIDDON, ESQ.

Titles of Books.	*Donors.*
EGYPT.—On the Cotton of Egypt. By G. R. Gliddon, Esq. 8vo. London, 1841	G. R. GLIDDON, ESQ.
GUINEA.—Chronica do Descobrimento e Conquista de Guiné, escrita por Mandado de Elrei D. Affonso V. pelo chronista G. E. de Azurara, precedida de una introducção e illustrada com Algumas Notas pelo Visconde de Santarem. 8vo. Paris, 1841 . . .	VISCOUNT DE SANTAREM.
——— Memoria sobre a prioridade dos Descobrimentos Portuguesas na Costa d'Africa occidental, pelo Visconde Santarem. 8vo. Paris, 1841 . .	IDEM.
MADAGASCAR.—Notices Statistiques sur les Colonies Françaises; Madagascar et les Iles St. Pierre et Miquelon. 8vo. Paris, 1840	DEPÔT DE LA MARINE.
NIGER.—Picturesque Views on the River Niger. By Commander Wm. Allen, R.N. 4to. London, 1840	CAPT. ALLEN, R.N.
SENEGAMBIA.—Reise nach Senegambia in 1838. Von S. Brunner, M.D. 8vo. Berlin, 1840 . .	DR. BRUNNER.
TRIPOLI.—History and Present Condition of Tripoli. By Robert Greenhow, Esq. 8vo. Richmond, U.S, 1835	R. GREENHOW, ESQ.

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1831.—Mr. Richard Lander, for the discovery of the course of the River Niger or Quorra, and its outlet in the Gulf of Benin, in Central Africa.

1832.—Mr. John Biscoe, for the discovery of the land now named "Enderby's Land" and "Graham's Land," in the Antarctic Ocean.

1833.—Captain Sir John Ross, R.N., for discovery in the Arctic Regions of America.

1834.—Major Sir A. Burnes, C.B., F.R.S., for the navigation of the River Indus, and a journey by Balkh and Bokhara across Central Asia.

1835.—Captain Sir George Back, R.N., for the discovery of the Great Fish River, and navigating it to the sea on the Arctic Coast of America.

1836.—Captain Robert FitzRoy, R.N., for the survey of the shores of Patagonia, Chile, and Peru, in South America.

1837.—Colonel Chesney, R.A., F.R.S., for the general conduct of the "Euphrates Expedition" in 1835-6, and for the accessions to comparative and physical geography relating to the countries of Northern Syria, Mesopotamia, and the Delta of Susiana.

1838.—Mr. Thomas Simpson, [Founder's Medal,] for the discovery and tracing, in 1837 and 1838, of about 300 miles of the Arctic shores of America.

——— Dr. Edward Rüppell, [Patron's Medal,] for his travels and researches in Nubia, Kordofán, Arabia, and Abyssinia.

1839.—Mr. R. H. Schomburgk, [Patron's Medal,] for his travels and researches during the years 1835-9 in the colony of British Guayana, and in the adjacent parts of South America.

——— Major H. C. Rawlinson, E.I.C., [Founder's Medal,] for his travels and researches in Susiana and Persian Kurdistán, and for the light thrown by him on the comparative geography of Western Asia.

1840.—Lieut. Raper, R.N., [Founder's Medal,] for the publication of his work on "Navigation and Nautical Astronomy."

——— Lieut. John Wood, I.N., [Patron's Medal,] for his survey of the Indus, and re-discovery of the source of the River Oxus.

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ADDRESS

TO THE

ROYAL GEOGRAPHICAL SOCIETY OF LONDON;

Delivered at the Anniversary Meeting on the 24th May, 1841,

BY

GEORGE BELLAS GREENOUGH, F.R.S., &c.
PRESIDENT.

GENTLEMEN,

THE number, extent, and variety of the subjects upon which I have to address you, obliges me to be concise: without further preface, therefore, I propose to point out to you in the first place the shoot which geography has made during the past year, and the extent of those connected ramifications which may be denominated geographical literature; and afterwards to submit to you some considerations which I regard as important in relation to a few departments at least of geographical science.

In the Athenæum journal will be found a faithful, if not accredited, report of the papers read at the meetings of our Society, together with an abridgment or review of the most interesting works on geography immediately after their appearance.

Of the Nouvelles Annales des Voyages the third series has been brought to a close, and the fourth, being under nearly the same management, promises to be equally valuable. In this new series are enumerated the principal discoveries announced during the last twenty years.

The magazine, entitled 'Hertha,' which ceased nominally after the death of Hoffmann, is carried on by his colleague, Berghaus, under a new title, Annalen der Erd, Völker und Staaten-kunde.

In connexion with the 'Annales des Voyages,' we have in the

'Archives des Voyages' a collection of geographical letters, memoirs, itineraries, &c., of early times, many of them original or very scarce.

M. Navarrete at Madrid has recorded the several discoveries of Spanish navigators in the fifteenth and sixteenth centuries. In a series of Russian travels edited by M. Vlastov, at St. Petersburg, we find an account of a journey in the Holy Land as early as the twelfth century.

Of the travels of Ibn Bátútah, Professor Lee translated the abridgment for the Oriental Translation Society. The Royal Academy of Lisbon is now printing the entire work. Viscount Santarem is about to edit the Portuguese chronicle of Gomez Eanez de Azurara, with an introduction and many curious notes.

M. Ticozzi has comprised in sixteen volumes a geographical and political sketch of all countries.

Topographical dictionaries have multiplied beyond expectation in Italy, Germany, France, Switzerland, and elsewhere. The Dictionary of France by M. Girault, which gives the names of all the communes and more than 20,000 hamlets, is in two quarto volumes, with 180 engravings.

The discovery of a north-west passage, which has flattered and disappointed the hopes of so many generations, still remains incomplete. The sad fate of the intrepid and indefatigable Simpson, to whom one of the royal medals was awarded last year, and who seemed of all men living the most likely to solve the problem, is generally known, and the subject is much too painful to be unnecessarily dwelt upon. The report of M. Koschevárov, a Creole officer, who was sent out by the Russo-American Company upon a kindred enterprise, but arrived too late to deprive Messrs. Dease and Simpson of the glory of their discovery, is on the eve of publication, if not published.

The January Number of the Nouvelles Annales contains the particulars of an expedition appointed by the same company to examine a tract of country situated on the north-western coast of North America. M. Glazunov, the leader of the expedition, started in 1833, and in the space of 104 days went over 2080 versts (1387 English miles) of ground. A map of this hitherto unknown district is appended to the description.

M. Povkovski the astronomer, and M. Baer the naturalist, finding it impracticable to explore Novaia Zemlia, according to the instructions of the Petersburg Academy, confined their investigations to Finmark and the three divisions of Lapland. Professor Zetterstedt has described the natural history of Lapland generally, and Mr. Böthwink its geological structure.

M. Berthelot has laid before the Geographical Society of France an ample account of the voyages of discovery undertaken in the Bombay,

the Vénus, the Dunkerquoise whaler, and the Recherche. The expeditions of Dumont d'Urville and Wilks having the same object, and crowned nearly at the same time with equal success, are so familiar to the public that I need here only allude to them. From the vast tracts of ice in the antarctic regions, Buache predicted that there must be in that part of the world high mountain-ranges and large rivers, with an inland sea wherein those masses were generated as in the Arctic.

The Commission of Northern Discovery, at the head of which is M. Gaimard, have published a History of Iceland and a description of its physical structure illustrated by numerous views for the most part basaltic, taken along its rugged and precipitous coast.

The description of M. Vaillant's voyages in the Bonite will occupy fourteen octavo volumes, of which two have appeared. It will be embellished by numerous engravings, and three atlases.

The appointment of M. de la Roche to accompany the Erigone in her voyage to the Pacific Ocean is considered by his countrymen a pledge that in this expedition the interests of science will not be disregarded.

Messrs. Swenstrap and Schytte have been despatched by the Danish government to investigate the natural and artificial productions of Iceland, and the Bellona frigate, which has sailed for Cape Horn, has on board in M. Krayer a well-known naturalist and geographer.

A new expedition will probably be fitted out by the Academy of St. Petersburg to further scientific researches in Siberia.

The governor of the Hudson's Bay Company (Sir George Simpson) has started for the Rocky Mountains. After visiting the several settlements north on the Columbia, he proposes to cross the sea of Okhotsk, and proceed by land to Kyakhta and St. Petersburg.

In two volumes, recently published, Capt. Lafond de Lurcy has presented to us the first-fruits of his fifteen years' observations in all parts of the globe. I shall have occasion to refer to this work again in the course of my address.

At the Royal Library at Paris great exertions are making to obtain a collection of maps worthy of that noble establishment, and I am happy to observe indications of a similar spirit in the British Museum.

The Emperor of Russia has given orders that the most interesting reports received by the Mining department, which was re-organised in 1835, shall be published in French. The annual reports for 1836, 1837, and 1838, which came out at once, contain a detailed account of the institution, its regulations, the sites of the mining districts, and the organisation of their establishments: henceforth the reports will be published

annually, one year intervening between the appearance of the original and the translation.

A synopsis of the several towns in Russia, showing their comparative importance and statistical features, has issued from the cabinet of the Home Office at St. Petersburg.

Professor Possart, of Stuttgard, has brought out an interesting treatise on Scandinavia and Sclavonia.

M. Boué has written a valuable work on Turkey. He describes that country as composed of seven or eight systems of mountains, which run in different and even opposite directions, but never constitute what can properly be called a central chain. At the meeting of these systems are often vast hollows, sometimes occupied by lakes, a characteristic feature of western Turkey and continental Greece. The highest summits are in the neighbourhood of the lowest depressions. The abundance of flat-bottomed cavities on lofty eminences give the country a singular appearance. In the centre of Turkey may be observed, at the southern base of the crags which traverse it from west to east, a chain of these hollows which may once have been uninterrupted. The basins of Uskúp, Gustendil, Thrace, and others running on to Adrianople, are links of this chain. The form of the country renders it easy to make communications from N. to S. or from N.W. to S.E. in the western or central districts; while in the eastern it would be difficult to carry any from W. to E. or from N. to S. In the plain of Mœsia several natural roads are passable in a carriage. In some provinces, particularly Herzegovina, the lakes find subterranean outlets, and owing to the accidental obstruction of streams, and the shifting of their channels, lakes and torrents laid down upon a map sometimes disappear only a few years after its completion.

Similar to the structure of Turkey, as described by M. Boué, is that which Colonel Marmora assigns to Sardinia. Immense marshes, some of which have artificial communications with the sea, form one of the distinguishing features of this island; the plains are of great extent, and several of them extremely fertile. Mountains are numerous, but there is no mountain-chain in Sardinia.

By his recent monograph and the beautiful plates which accompany it, Professor Agassiz has familiarised to us the glaciers of Switzerland with all their attendant phenomena; and by recognizing over extensive areas in distant places and at high elevations the same phenomena, easily explicable by the agency of glaciers, but inexplicable by any other cause hitherto assigned to them, he has thrown a new and unexpected light on the past history of the earth and greatly extended the range of physical inquiry.

Mr. Murray's hand-books continue to be conducted with spirit. That which relates to Greece, Turkey, and Asia Minor will be necessary to the outfit of oriental travellers.

A volume of much more extensive utility has this day been laid upon your table by your Secretary (Colonel Jackson), entitled 'What to Observe.'

EUROPE.

Russia.—M. Moravyev, known for his travels in Egypt and Syria, has lately described those spots in Russia whose reputed sanctity renders them the resort of pilgrims and devotees. The journal entitled the 'Siberian Mercury' is discontinued: two volumes drawn up by the Royal Academy of St. Petersburg evince the undiminished desire of that learned body to extend our knowledge in respect to Russian geography.

Two works have been written on the Kossaks of the Volga, one by M. Nessedyev, the other by M. Popov, professor at Kazan. The scenery of that river has been described by M. Chernetsov. The fair of Novogorod has found an historian in M. Subov, and the province has been investigated by M. Helmersen, to whom we are further indebted for an account of the geological relations of Russia in general. M. Bergstrassen has given a report on the province of Olonetz, and Mr. Demilov has availed himself of the French press to make known his observations principally in the Crimea.

Prof. F. Parrot (son of the academician) lately died in his fiftieth year at Dorpat, in Livonia. He was distinguished as the author of Travels to the North Cape, the Pyrenees, the chain of Caucasus, and the Crimea. I am happy to add that very few geographers or travellers of celebrity have died during the past year.

Denmark—Sweden.—Captain Baggersen has written on Danish geography and statistics, and Colonel Forsell on Swedish.

Prussia—Poland.—The boundary of these countries was determined by treaty in 1815, but the industry of Professor Berghaus has now for the first time made it generally known.

Greece.—An elaborate account of Greece has been published by M. Fiedler, who, by desire of his government, passed three years in the several provinces in searching out the necessary data.

ASIA.

Turkish Asia.—Of the numerous works which have issued of late from the press at Paris, relating to the Levant, few only are geographical. Among these may be mentioned the tour of M. Baptistin Poujoulat through

Asia Minor, Mesopotamia, Palmyra, Syria, Palestine, and Egypt; two volumes only are yet published.

M. Prat, formerly of the French navy, and who afterwards held a commission in the army of Mohammed 'Alí, is drawing up an account of his observations; and we may expect from M. de Vergnes a description and map of Hijáz.

To the French translation of Mr. Bell's 'Circassia,' M. Vivienne has added an introductory memoir, with numerous notes.

The plain of Troy is a subject upon which so much has been written, and written in vain, that it would be a waste of time to attempt its further elucidation. In the paper which Dr. Forchhammer has presented to us the facts I believe may be depended upon; but I cannot subscribe to the justness of his conclusions. If the plain of Troy be now what it was in the days of Homer, the poet's description was not only incorrect, but prophetic; for in a district where mountain-torrents alone are producing continual changes of level, independently of those brought about by other causes, it is inconceivable that the aggregate amount of these changes, after the lapse of more than two thousand years, can be faithfully represented by 0. The deposit of alluvial matter by the side of the river took place, in the opinion of the author, long before Mount Ida rose from the sea. This is another gratuitous hypothesis, which, if it were capable of being substantiated, would only lead to new difficulties, for the cause must precede the effect. To identify the existing rivers of the Troad with the Homeric seems to me hopeless, but within the last year the attempt has been renewed, not only by Dr. Forchhammer, but also by M. Mauduit.

Of the journey of Messrs. Ainsworth and Rassám, conducted at the joint expense of the Society for promoting Christian Knowledge, and the Royal Geographical Society, a full account has been given in the Journal up to their arrival at Mósul on the 31st of January, 1840.

In the beginning of June last, the travellers left Mósul, and having crossed the mountains of Kurdistán, and visited 'Amádiyah and Julámerik, ascended to the head waters of the greater Záb. From Urumiyah and Ushneï they re-entered the mountains, ascended the Peak of Rowándiz 10,568 feet above the level of the sea, and went back to Mósul. Their account of this journey will appear in our Journal with a map and several geological sections.

Now that the expedition has closed its labours, I shall briefly state the result. Proceeding from Skútari the party has traversed Asia Minor in a south-easterly direction to the Persian frontier, a range of more than 16 degrees of longitude, and 5 degrees of latitude. Within these

general limits their route was most circuitous, winding along the courses of rivers, turning lakes, crossing valleys, and threading the defiles and passes of mountains; travelling in this way some thousands of miles, in many parts over a country hitherto but imperfectly known, and consequently incorrectly laid down on our maps. They have determined the latitude of 64 places, and the longitude of about a dozen. Nearly 150 heights have been ascertained, and the approximate population of about 90 towns or villages. Numerous positions have been determined by compass bearings; the hydrography of the country has been materially corrected, particularly in Paphlagonia, and near Kaisáriyah; the errors respecting the eastern tributaries of the greater Záb have also been rectified. The obscure districts of Berni and Adeyaman have been explored, and the important Pass of Erkeneh: many facts have been pointed out interesting to the geologist, such as the modification of the limestone by contact with igneous rocks, and the difference between the sedimentary beds in Bithynia and Paphlagonia, the former appearing to have been deposited in a deep sea, and the latter to have had a littoral origin. Continuous oyster-beds have been observed at an elevation of 3000 feet above the level of the sea in the neighbourhood of Za'farán-lí, where the rocks abound in fossils, some beds being wholly composed of nummulites. The copper mines of Bakír Kúreh-sí, esteemed so valuable in the time of Mohammed II., the salt mines between Bayád and Kankari and those at Túz Kóï on the Kizil Irmák, the copper mines of U'rah Tágh, the galena mines of Denek Ma'den, producing weekly 35,000 lbs. of lead and 10 lbs. of silver, and the meerschaum pits of Serví Hisár have been severally examined. The form and dimensions of the great salt lake of Túz* Chólí, 2500 feet above the sea, have been ascertained. The hills round Angora have been carefully examined, and the rocky and cavernous region of Garsaurites, inhabited by troglodytes. The extraordinary fact has been noticed that the plain of Kará Hisár, though elevated 3420 feet above the sea, does not send out a single stream. The iron mines, lead mines, and sulphur pits of the Hakkárí have been examined. Some light has been thrown upon the ancient geography of Asia Minor, and much information gleaned respecting the productions of the country, and the manners and state of its present inhabitants. Thus, though the objects of the expedition have not been carried out to the extent anticipated, a great deal has been effected along the line of route.

Mr. Southgate, a missionary, has visited the Lake of Ván and the city of Bitlís. He describes Bitlís as situated at the junction of three

* Túz, in the Turkish language, means salt.

deep mountain valleys, and extending some way up into each of them. Three little streams water these valleys, and uniting flow into the Tigris. On leaving Bitlís Mr. Southgate proceeded for an hour and a half along the road to Músh; two hours more brought him to the Lake of Ván, bounded on the right by high rocks, and on the left by a gentle slope broken into hills, and extending to the snowy peak of Seïbán. On his return he visited Baghdád.

In M. Norov's recent Travels through the Holy Land, the Slavonian manuscripts which he there collected are incorporated.

Mr. Fellows in his second journey proceeded from Smyrna southwards to the vale of the Caystrus; leaving Mount Tmolus on the East, he crossed the range of Messogis, and passed up the vale of the Meander to the foot of Mount Cadmus; the assigned latitude of Aphrodisias he ascertained to be correct, not so the longitude. Returning to the Meander, he crossed its tributaries, the Harpasus and Marsyas, following the latter almost to its source in the ridge, which, as laid down by Colonel Leake, stretches in a N.E. direction from Moghlah to Mount Cadmus. From Mylasa he journeyed southwards along the Peræa or coast of Caria, which is eminently picturesque, till he reached Lycia, the main object of his journey. Mount Massicytus is the most remarkable feature in Lycia; it separates the hills and dales from the high table-land formerly occupied by the people of Milyas and Cibyratis. Covered with perpetual snow, its summit, as estimated by Mr. Fellows, is not less than 10,000 feet above the level of the sea. Numerous springs burst out along its sides and fall abruptly into the Xanthus, the course of which attains the length of 200 miles. A second line of springs occurs in that part of the range in which the principal town is Kasabah, and form a river which, making its way by a gorge of 25 miles through a range of mountains 4000 feet in height, reaches the Mediterranean at Myra. A third river, rising near the ancient city of Arycanda, assumes its name. Other deep and never-failing streams near Limyra in the plains of Phineka derive their supply from a considerable river which precipitates itself into a cavern, some 30 miles to the north, in the high country of Milyas close to Almah-lú, a modern town containing 25,000 inhabitants mostly Armenian, which, if visited, has never been described by any European. Plains of corn-land well cultivated extend for 25 miles from the town in one direction, and there is a lake above 10 miles in length. Another plain almost equally extensive stretches to the south-east: these plains or table-lands attain the height of at least 4000 feet above the level of the sea.

The northern frontier of Lycia is a prolongation of Taurus. Mr.

Fellows crossed this chain to that part of Phrygia which lies S. and S.E. of Mount Cadmus, where he found an extensive lake, which having skirted for nearly 20 miles, he discovered beyond it, on the north, a plain extending 100 miles to the base of Mount Cadmus. From bearings, Mr. Fellows places this mountain 50 miles eastward of the spot usually assigned to it; a position not at variance with observations made previously at its base: the district he passed through is well cultivated and bordered by villages.

The ancient Calbis, a considerable river, which, after a course of 200 miles, reaches the sea at Köïjiz nearly opposite to Rhodes, rises in Taurus, N.W. of Aṭáliyeh, and it flows on the north of that ridge. In many maps, even the best, it is made to rise on the N.E. near Mount Cadmus; but there are few streams in that district, owing to the porous nature of the soil. The rivers whose sources are on the N. of Mount Cadmus find their way to the Lycus and Meander.

Mr. Fellows found the chart of Capt. Beaufort most valuable, and as the mountainous character of the country enabled him to command at one view the western, southern, and eastern coasts, a careful notice of the bearings provided him with the means of constructing a tolerably correct map. In this manner he determined the sites of several cities, and by examination of the coins and inscriptions discovered, some of them bilingual, ascertained the accuracy of the names awarded to those cities; names which not only tallied with the description of them as given by classical historians, but which received further confirmation from the list of frontier towns given by Strabo, Ptolemy, and other ancient geographers. The map thus constructed differs materially from those which have been formed by scholars solely upon classical authorities, more especially in the spaces occupied by different nations, which, naturally enough, have been imagined greater than they are in reality.

The forthcoming volume of Mr. Fellows's work is to contain a small general map showing his entire route, and a larger one of Lycia only. In the earlier part of his journey he went over nearly the same ground as Chandler and Hamilton; but of the interior of Lycia we knew absolutely nothing: he has therefore contributed in no slight degree to the advancement of geography ancient and modern. He has faced the dangers and diminished the apprehensions which have hitherto opposed the exploration of this highly interesting country; he has opened the way to future researches into its botanical and geological characters: his collection of coins may probably throw light upon its ancient history, and the bilingual inscriptions upon rocks which he has discovered (the work of the ancient inhabitants) will it is hoped

lead to the recovery of a language supposed to have been for ever lost.

Mr. Fellows considers M. Texier's map of Lycia to be in its best parts only a compilation, and with regard to the physical features of the country strikingly incorrect.

In a learned pamphlet, published at Berlin, M. Franz has described five towns and deciphered five inscriptions in Asia Minor; it is accompanied by an elaborate map of Phrygia, and a sketch of that country after Ptolemy by H. Kiepert.

M. Davidov, who has been travelling in Greece and Asia Minor with a train of artists, has recently brought out at St. Petersburg an octavo volume with beautiful plates illustrative of those regions.

An official report on the Caucasian provinces made in 1837 has been largely corrected by M. Chopin.

M. Letellier, formerly vice-consul at Tiflís, to whom we are obliged for a polyglot vocabulary of Caucasian languages, has lately published a Seven Years' Tour in Georgia, Persia, and Russia.

Mr. Cruttenden, who travelled from Mokhá to Ṣan'á in search of inscriptions, observes that the river Zebíd, marked upon his small map, ceases to flow during the dry season: at Beït-el-Faḳíh he experienced a more intense degree of heat than in any other part of Tehámah: the wind which passes across a sandy plain separating Beït-el-Faḳíh from Ḥodeïdah, he says, is actually suffocating. He describes the Valley of Senníf, seen after a six days' journey across deserts, as strikingly beautiful, luxuriant in vegetation, well timbered, and watered; its shape is that of a horse-shoe. Beyond Senníf the country becomes bold and magnificent, and the difficulty of threading the mountain defiles is too great to admit of travelling by night: after leading their horses up a very steep ravine the travellers entered a vast plain by the valley of Wádí Ṣeïhán, and beheld to the north the mountains of Jebel Harráz, to the south those of Jebel Burra': the former inhabited by the Khórah tribe who lie in wait for travellers and, unlike most of the Arab banditti, murder their captives. The mountains rise 1500 feet above the plain: a light loam, conveyed from the mountains by rains and torrents, is peculiarly favourable to the growth of coffee, which is much cultivated: after passing the village of Ṣeïḥán, situated in an extensive plain, that of Mofḥaḳ on a nearly inaccessible ravine, and that of Motteneh at the extremity of a long rocky plateau, the travellers arrived at the Valley of Ṣan'á, which is finely wooded, but extremely hot: the town is considerable. Shortly after leaving this place Mr. Hulton, the companion of Mr. Cruttenden, died of fatigue.

Persia.—Captain Blosse Lynch, whose Survey of the Tigris between

Ctesiphon and Mósul is published in our 'Journal,' has made known a new line of communication with India stretching from Sámsún through the valleys of Taurus, along the ancient road from Pontus into Mesopotamia. He passed the northern springs of the Tigris, close beneath the 'Akár Bahá mountains, and at Diyár-Bekr embarked on a raft of inflated skins, and floated with the stream, which is navigable in no other manner, for more than a hundred miles. A sudden change takes place in the character of the country, from the point where the Batmán Sú joins the Tigris. The river deepens, and the open undulating unwooded banks are succeeded by steep cliffs, or rich sloping plains. Captain Lynch considers the junction of the Khábúr with the Tigris to be the place where the Greeks effected a passage over the Carduchian mountains, but sought in vain for the ford above Mósul where Alexander crossed before the battle of Arbil. Arbil stands in a plain broken by ravines or watercourses, the banks of which must have been levelled to admit the passage of the chariots of Darius.

Mesopotamia.—Captain Lynch and the officers with him have examined with attention the river district between Baghdád and the Khábúr, which joins the Tigris a little below the "overhanging cliffs" of Zenophon; they have accurately determined the line of the principal Canals of Babylonia, by which the Tigris communicated with the Euphrates, and laid down trigonometrically, as far as more pressing duties would allow, the intermediate country. Their survey will give a chain of well-fixed points for more extended operations into the mountain tract on the east of the Tigris, and will be of great use in drawing up future itineraries.

Kashmír.—Few spots, perhaps, in the gorgeous East have stronger hold on our imagination than Kashmír. Among recent visitors of this celebrated valley Baron Carl von Hügel stands conspicuous: his merits as a systematic and scientific traveller are of the highest order. Of his splendid work an abstract appears in the last number of our Journal, and we hope ere long to find in our library not merely the original, but an English translation of it. It affords me much pleasure to hear that the noble author has received from his sovereign, the king of Würtemburg, a diplomatic appointment in this country.

Mr. Vigne, who claims, I believe justly, the merit of being the first European traveller who penetrated to Iskárdó, resided longer than Baron von Hügel in Kashmír, and traversed it at three different periods and in various directions. His observations will soon be communicated to the public. His map of Kashmír and the passes from thence to Thibet and the Alpine Pinjáb, laid down on a scale of two miles to the inch, principally from a base of three miles, measured

along a plain in the centre of the valley, by Lieutenant Mackison and Dr. Falconer, has been presented to the Honourable East India Company, and will appear under their auspices.

India.—The account of Kunáwar, which Captain Alexander Gerrard considered his best work, is now publishing under the superintendence of Mr. Lloyd. It contains an able exposition of Captain Gerrard's researches in the Himálaya together with those of his brothers.

Kábul, Ghazneïn, the Bólán Pass, and other places more especially interesting at this period, have been illustrated by Sir Keith Jackson: and Lieutenant Irwin has thrown new light on the climate, soil, and productions of Afghánistán.

Among the numerous papers printed by order of the House of Commons a Memoir on Afghánistán and Persia is to us especially interesting: the introduction enumerates and describes the various territories confirmed or ceded to the Mahárájá of Láhór by Sháh Shujá'u-l Mulk: we find also a detailed account of the principal routes through these countries, with notices descriptive of the most remarkable towns and passes: among these are Ghazneïn, Herát, Kelát, and Kandahár. The Bólán Pass is minutely described, though no description, it is said, can convey to the reader an adequate idea of its impregnable strength: the Appendix contains notes on the passages of the Indus, and on the trade, produce, and climate of Kábul. These documents have been compiled partly from published accounts ancient and modern, partly from private papers in the archives of the India House. These archives have been of considerable service also to Mr. Montgomery Martin in compiling his 'Buchanan Papers,' illustrating the history, antiquities, topography, and statistics of eastern Asia: they occupy three octavo volumes, and comprise official surveys of Behár, Sháhábád, Bhágalpúr or Górak'h-púr, Dínáj-púr, Púraniya, Rang-púr, and Assám. Major Jervis, I am happy to find, has undertaken to compose a popular and philosophical digest of the geography and statistics of Asia, and more especially of our Indian possessions.

Hydrography of Asia.—Mr. Wise, late chief officer of the Hon. Company's ship Edinburgh, has analysed a hundred voyages to and from India, China, &c.

Mr. Windsor Earl has translated from the Dutch an account by Lieutenant Kolf of voyages performed in 1825 and 1826 by a brig-of-war, the Dourga, through the southern parts of the archipelago of Molucca (imperfectly known), and along the southern coast of New Guinea, till then unexplored.

Siberia.—M. Féderov, after expending six years on astronomical and geological investigations in the south-west of Siberia, has returned

to St. Petersburg. M. Karelin at the expense of the Natural History Society of Moscow has been travelling in the south of Siberia; and Mr. Schrenk is gone to botanise along the frontier of Russia and China.

China.—It is natural to expect that our closer intercourse with China will enable us to obtain a clearer insight into the geography of that mysterious country: one important piece of information has been already acquired: I refer to the great Yang-tse river (Kyang), which, rising in the mountains of Thibet south of Lake Khokho Noör, and gathering volume from numerous tributaries, traverses the richest provinces of the celestial empire: its banks are adorned by numerous wealthy cities, more especially Nan-king, the ancient metropolis of China.

The English squadron, on its late visit to the gulf of Pe-che-li, had occasion to notice how anxiously this quarter was watched by the government and how large a force was concentrated at the junction of the Yang-tse Kyang and the Grand Canal (the great alimentary canal as Mr. Davis very properly designates it) by which the produce of the southern and midland provinces is transported to Pe-king, and the comparatively barren regions of the north. This circumstance it is which renders Chusan an important station, being the spot from which foreign merchandise may be most easily imported or a hostile force most effectively discharged into the bowels of the empire. It is said that the Tartar rulers, in their desire to guard against such consequences, have from their first accession adopted the most effectual method of keeping this channel of communication secret, that of keeping it useless: they have denied ingress and egress to their own coasting vessels which would naturally have gone up this river, and obliged those natives who trade with foreign countries to land their cargoes at Shang haï, in the Wú-sung river, the mouth of which is opposite Tsung-ming, and re-embark them on the Grand Canal; so that they can reach the Yang-tse only by a circuitous route and at a considerable distance from the coast.

Thanks to the exertions of Captain Bethune, the mystery in which the navigation of this important river has hitherto been involved, is now removed. In the centre of the frith the island of Tsung-ming divides the stream into two branches: the northern branch is impracticable, but the Conway and Algerine cruisers, under the orders of Captain Bethune, found even upon the bar near the entrance of the Wú-sung river twenty-one feet of water, and having passed this obstacle a channel varying from three to four, five, and six fathoms in depth, and from one to three miles in width, so that a line of battle ship may easily effect an entrance. Captain Bethune carried his survey sixty miles to the west of the mouth of the Wú-sung river, and at his turning point left it seven miles wide: above this its soundings are

unknown; but the river at its junction with the Grand Canal is described as three miles wide, and large junks are known to ply at Nan-king.

The Canton Repository, a monthly periodical, abounds in information upon all matters connected with China.

I hear that the Japanese, whose antipathy to European connection is still stronger than that which is felt in the celestial empire, are publishing a Japano-Chinese dictionary on the same plan as Morison's. Such a work will be useful, especially as the Japanese is an alphabetical language.

Africa.

Mr. Wiltshire has verbally communicated to us the remarks he made on a recent journey through Morocco: to Terramona, described by Davison as a Gibraltar in miniature, he assigns an elevation of 3500 feet. A salt lake in the province of Hammah yields, he says, a rental of 4000 ducats per annum. The relations of Morocco to France form the subject of an interesting article in the 'Nouvelles Annales des Voyages.'

In the same periodical is given a tabular view of the French possessions in Algeria; and we are indebted to M. Van der Maelen for a new physical and political map of that country.

Baron Baude, counsellor of state, has published two volumes on Algeria, illustrated by plates. The sketch of the history, geography, and natural productions of Algiers, by Dr. M. Wagner, who accompanied the French expedition against Belídah, and availed himself of the treaty of Tafnah to visit the greater part of 'Abd-el-Ḳádir's country, is said to be the most comprehensive work on the subject since the time of Shaw.

M. Ternaux Compans is bringing out translations of several very rare tracts on Algiers, Oran, &c., by Spanish and Portuguese travellers.

The description of Guinea by André Alvarez d'Almada, written in 1594, but of which an extract only has hitherto been published, is now printing entire at Oporto.

M. Gustave d'Eichthal, in a paper presented to the Geographical Society of Paris, has investigated the origin of the Fúlahs or Fellátahs, a swarthy race, inhabiting Nigritia. He considers it certain that they are not aborigines, but colonists; their language, he maintains, belongs to the Malay family, and is closely allied to the Javanese.

M. Jomard has drawn up an account of the Gallas of Limmú, and has constructed a map of the route from Limmú to the confluence of the Blue and White Nile. He describes the physical features; traces the principal routes; examines the construction of the language, of which he gives a vocabulary; and concludes his paper by remarks on the climate

and natural productions of the country, and the character of its inhabitants.

The account of Africa recently published by Mr. M'Queen is a work of great industry and research. He says that his map was constructed by arranging, on a large scale, the various places, bearings, distances, and journeys of African geographers and travellers, both ancient and modern; then combining them and correcting them by each other, or by a few established positions, and afterwards reducing the whole. He differs from Captain Allen in his account of the supposed course of the river Yeú, and agrees in this respect with Lander, Clapperton, and Denham. He also disputes Lander's statement that the Adoo flows into the Niger.

Mr. W. Desborough Cooley, in his well-timed 'Essay on the Negroland of the Arabs,' endeavours to found the early history and geography of Central Africa on a solid basis—the evidence of those Arabian travellers and writers, as Ibn Bátútah and Ibn Khaldún, who, under the stimulus of commercial profit or religious proselytism, made their way during the middle ages through the northern deserts to Negroland. Impressed with a strong conviction that systematic geography, when not founded upon science, tends to erroneous conclusions, he patiently deduces his inferences from internal evidence, according to the strict rules of logic.

Ibn Sa'íd, who wrote in the thirteenth century, has enumerated, he says, thirteen nations of blacks, who extended across Africa, from Ghánah on the W. to the Bojá on the shores of the Red Sea; yet it is not till we arrive at the tenth of these, or Kánem, that we are able to identify satisfactorily the nomenclature of Ibn Sa'íd with that of the moderns. The first nine nations towards the W. remain undetermined.

Mr. Cooley proves that the site of Aúkár, the ancient capital of Ghánah, must have been very near the present site of Tombuktú, if, indeed, they were not identical. Having established this, he proceeds with a train of very ingenious arguments, by which the approximate sites of many others of the principal towns and routes of ancient Ghánah are clearly indicated. Great probability is given to his theory by the exact coincidence of the position of the desert in his conjectured route to Tombuktú with the recorded position of the desert in the ancient route to Aúkár. He compares the writings of El Bekrí with those of El Idrísí, and gives a decided preference to the former. He describes the journey of Ibn Bátútah, and from this record proves the position of the capital, and many of the towns of Málí, and establishes its northern and eastern boundaries. He disposes very summarily of the hypothesis which identified Kánó with Ghánah, by pointing out that the former contains not a single stream considerable

enough to retain its waters during the hot season, and therefore not one with which it is possible to identify the great navigable river mentioned in all the accounts of Ghánah. He states that the appellation Tekrúr, though widely and vaguely extended in the course of time, was originally restricted to a spot between Sillá and Sanghanah, the territorial name of which he conjectures to have been Zághah. This account is somewhat different from that of Mr. M'Queen, who pronounces that the name Tekrúr, the proper spelling of which he states to be Takrour, included the central portion of Súdán, from Dárfúr to the mouth of the Gambia. Mr. Cooley then proceeds to point out the distinctions between Kúghah, Kághó, Kaukau, and Karkar, the two first of which he believes to be different designations for the same place, while the others, so often improperly applied, refer to separate territories. His last arguments, exclusive of the division of Negroland into nations, are directed to prove the identity of the ancient race of the Demdem with the modern Yem-yem, or N'yem-nyem. The position of the former among the hills of Kabi, nearly coincides with that of the latter in the mountainous country S. of Kanó: both are wild, savage, and reputed cannibals; and, finally, if they are not identical, the race of the Demdem must be totally extinct, as no other traces of them are discoverable. By proving that the course of the Great River, as given by El Bekrí, is correct, and that of El Idrísí erroneous, our author convicts the latter of a mistake, when, speaking of Lemlem and Demdem, he represents as two distinct countries what are in fact variations of the same name. The postscript is devoted to establishing the route from the capital of Ashanti, through Gonjah, to the Kowárá; and many difficulties in the works of native writers are accounted for by their habitual substitution of *d* for *r* in the names of places.

The 'Ethiope,' a Liverpool steamer, after attempting in vain to go up the Benin and Wari branches of the Kwara, eventually made its way to Láyaba (Lever of Lander), situate on its western bank 50 miles above Rabbah: beyond this the navigation is obstructed by rocks. The disposition both of the king of Rabbah and the people is said to have been friendly.

I congratulate you on the countenance and support which the Niger expedition has received from the first authorities of the realm: three steamers, admirably equipped, have been furnished by the Lords of the Admiralty, and 60,000*l*. appropriated by Parliament, in furtherance of that expedition. That the benevolent, patriotic, scientific objects contemplated by its promoters may be realised to the fullest extent, must be the wish of all who hear me; at all events, we have the satisfaction of feeling that the investigations which have taken place into the causes

of the unhealthiness of an African climate, and the remedies which have been suggested and are now under trial, will, in all probability, not only diminish the hardships and perils of the brave men who are engaged on this single enterprise, but will tend to secure the health and to prolong the lives of the inhabitants of either hemisphere, and of generations yet unborn.

Abyssinia.—Of Abyssinia we seem in a fair way of soon collecting considerable information; English and French travellers are now exploring it in various directions.

M. Lefevre, M. Petit, and M. Dillon have given routes of their travels in Tegrí in the year 1839, accompanied by a native itinerary from Derita to Naxda. M. Lefevre, who was subsequently employed by the Egyptian government in searching for metallic lodes in Sennár, died there at the commencement of last year.

According to the 'Bulletin,' M. Dufey is the first European who has visited the country of Showá, which he did in 1837, 8, and 9. He was accompanied in 1837 by M. L. Aubert. They arrived on the 9th of June at Masawwah; and, a few days after, passing the Taranta, they entered Abyssinia. M. Dufey travelled subsequently from Gondar to Ankóbar, and from Ankóbar to Zeïla', traversing thus a great part of Abyssinia. On the 19th of November he arrived at Tajúrah; and, sailing from the little port of Reitah, he arrived at Mokhá on the 8th of October, 1838. From Ankóbar to Zeïla', M. Dufey was 43 days. He died at Yembo'. The result of this commercial journey, which ended so fatally for M. Dufey, is six voluminous memoirs, or series of notes, on Abyssinia and Showá, the country of the 'Adels, the Red Sea, and Arabia; and a route map: geography, ethnography, commerce, medicine—nothing seems to have been neglected: and if commercial relations, equally advantageous to all parties, are the best means of advancing the civilisation of Africa, the way seems to have been prepared by M. Dufey and M. Aubert, as far as Abyssinia is concerned.—(See 'Bulletin,' Mai, 1840.)

M. Rochet d'Hericourt is said to have penetrated 540 miles into the interior of Abyssinia; he landed on the south coast, and made his way through the kingdom of Adel, subject to Showá, where he was received with the utmost kindness and hospitality; his excursions were made in the presence of royalty, and under an escort of from 1500 to 2000 cavaliers. M. Rochet's favourite pursuits are chemistry and geology, but he does not neglect the interests of commerce.

In a letter from M. d'Abbadie, published in the Athenæum, that gentleman states that his brother had visited the sources of the Abháï, or Bruce's Nile, crossed the river in several places, made frequent

excursions into the Gállá country, and proceeded to within 3 days' journey of Enarea, which, according to the information which he received, was situated in a comparatively low country. M. Arnauld d'Abbadie had obtained a letter in two languages, one of which, the Ilmorma, has an alphabet wholly unknown: he also discovered a MS. in two volumes quarto, on vellum, in Amharic, composed by the favourite companion of Mohammed Grañ, the Tamerlane of Abyssinia, whose exploits are only known by extracts from Ludolf and Bruce. This MS. abounds in descriptions and names of places from Harar Geï to Sennár, and would be a most valuable mine for a Rennell or a Ritter. M. d'Abbadie himself was to go to Showá, and his brother was to visit the western frontier of Dejczmach Gosho, and to join him at Ankóbar, whence they intended to make bold excursions due north and south, and to examine on the one hand the country of Doba and Agoko, and on the other the Gállá kingdoms which spread along the table-lands of Central Africa. M. d'Abbadie states that the road to Abyssinia crosses the Kólla, or low flat country, in a direct line as far as Katra, then winds as it ascends through the long and narrow valley of Hadas, which ends at the Taranta rivulet. Deksa, three days from the sea-coast, is, like all other border villages, a spot chosen for defence rather than convenience.

M. d'Abbadie, while proceeding from 'Adwá to Góndar, was stopped by the chief U'bí, and compelled to return towards the coast. At Dugsa he parted with his brother, and proceeded to the convent of Beezén to connect its isolated mount with Masawwa' on the coast, but an accident having deprived him of one of his eyes, he returned to 'Aden. He asserts that Dr. Rüppell is correct in making the water of 'Adwá flow south into the Takazzeï, instead of north (as asserted by former travellers) into the Mareb. The fact is not yet clearly established.

M. d'Abbadie visited the road passing through Káyakór (September, 1840), and connecting by a gentle descent the table-land of Tegreï with the Kólla near Masawwa'. This is the road followed by Christopher de Gama, and recently but imperfectly described by Von Katt. It was during this expedition that the loss of an eye stopped him in the measurements he was making by carrying triangles from Mount Iswahet in Samén to Mount Iserká Kò near Deksa.

In the 'Annales des Voyages,' and the 'Athenæum' copious abstracts are given of the travels in Abyssinia of Dr. Rüppell, whose name is so familiar to you, and to whom you so justly awarded a medal. I would earnestly recommend the members of this Society to study Dr. Rüppell's work in the original.

Dr. Rüppell describes the province of Samén in Abyssinia, which measures about 50 miles from north to south, and about 40 from east to

west, as an irregular mass of volcanic rocks, the highest crags of which nearly reach the line of perpetual congelation. The waters of this region are almost all collected in the river Bellegas, first discovered by him. It forms a boundary to Samén on the west and south, and descends into the Takazzeï. Enchetcab, the principal village of Samén, stands at an elevation of 10,000 feet above the sea, on an undulating plain devoid of trees, which however grow luxuriantly in the valley of the Bellegas, 4000 feet lower down. From Samén our author proceeded through the Mohammedan village of Dobark to Góndar, the capital of Abyssinia. He next resolved to visit the Kólla, a low, sultry, pestilential region covered with dense forests, at the northern base of the Samén range. A few hills, rising above the level of the noxious vapours which render the rest of the Kólla so deadly to man, are enlivened with villages, but every other part is uninhabited. Wild animals abound, and the soil is most prolific. After a residence of some weeks in the Kólla, Dr. Rüppell made an excursion southwards to the cataract of the Nile after it issues from the lake. He proceeded along the eastern coast of the lake, and passed through a handsome town named Kiratza, which has not been mentioned by any previous writer. His description of the cataracts of the Abay exactly coincides with that given by the Jesuit Godinho, but differs in some particulars from those of Bruce and Jerome Lobo. After his return to Góndar he took a road leading by the formidable pass of Sankaber on the northern side of Samén. Passing along a level, scarcely 40 feet in width, with a precipice nearly 3000 feet deep to the north, and a tributary of the Bellegas to the south, he came to a rude kind of entrenchment to which properly belongs the name of the Sankaber, beneath which the river Serima bursts forth and rushes down the abyss in a succession of cascades. Another day's journey brought him to a precipice 4000 feet deep, and commanding a view of the mountainous region of Tegreï. Hence he proceeded southwards along a bare and desolate valley which conducted him to the camp of U'bí, the ruler of Samén. He went, in company with this chief, to Sowana, a place on the northern slope of Bwahat, and, having received from him a safe-conduct, hastened to visit the capital of the ancient Greek kingdom of Aksúm. Dr. Rüppell differs from all preceding authorities in his account of the rivers of Aksúm and 'Adwá, which he describes as flowing southwards into the Takazzeï instead of northwards into the Mareb.

Dr. Rüppell pronounces that there is now every facility afforded to the traveller for entering and residing in Abyssinia, the fanatical hatred which the natives formerly nourished towards the Europeans being completely extinct. While at Masawwa', he made an excursion to the ruins

of ancient Adulis, still called Adúlí by the natives, and never before visited by an European. He ascertained its latitude to be 15° 15′ 44″ N., and its distance from Afté only a quarter of a league.

In a letter from Dr. Beke, dated Nov. 22nd, 1840, we are told that the political agent at 'Aden, to whom we are already indebted for his admirable survey of the coast of Arabia published in our 'Transactions,' has entered into alliance with the Somálí and Dankalí tribes, and purchased two islands at the entrance of Tajúrah Bay, as also a small one at the upper end immediately at the entrance to the inner bay. He has also directed a survey of the coast of Abyssinia from Báb-el-mandeb to Berberah, and the East India Company's brig Euphrates is at present employed thereon, having completed as far southward as Zeïla'.

The French have purchased settlements within the Red Sea at Eïd and Anfilah, at about 150 and 200 miles' distance respectively from the entrance of the strait of Báb-el-mandeb on the Abyssinian shore.

This information is interesting, as these acquisitions, it may fairly be hoped, will greatly facilitate geographical research in these parts.

Another letter, from Dr. Beke to Sir T. D. Acland, dated Tajúrah, Dec. 14th, 1840, and having for its object the establishment of the routes from Tajúrah to Ausá, thence to the Wollu Gállá, and from Zeïla' to Berberah and Harar, has been read to this Society.

These routes confirm the opinion of Dr. Beke, as expressed when in England, with the exception of the course of the river Hawásh, the termination of which holds a position entirely different from that which was before assigned to it. They were derived from the information of natives of Tajúrah, from which place Dr. Beke intended to start for Ankóbar. The journey from Tajúrah to Ausá occupies 15 days, that from Zeïla' to Harar may be completed in 12 by travelling day and night.

A messenger on foot can perform three caravan stages in one day; the stations which mark the close of the caravan stages are distant about a day's journey from one another.

America.

Newfoundland.—Mr. Jukes has made a physical and geological examination of a large portion of the coast by desire of the local government. Newfoundland has never been correctly triangulated, and much of the interior has never yet perhaps been trod by human foot; it is traversed by a range of primitive mountains, which take the same direction as the Alleghannies, and consist principally of granite and mica slate. Inconsiderable beds of coal are incumbent upon these, but their relation to the English is unknown, inasmuch as they are not capped by any

secondary rock nor accompanied by any fossil remains, at least sufficiently marked to be determined and classed: a third part of the island is said to be under water; the lakes are numerous, and many of them extensive; the roads are few in number and very limited in length, so that internal communications are extremely difficult. The old settlers are mostly from Devon and Dorset; of the more recent a large proportion are Irish. Our best maps ill represent the physical features. The general aspect of the island is barren and rugged; the surface consisting of a series of hills and valleys, varying in steepness, the one never rising into mountains, the other rarely expanding into plains. Masses of loose rock are scattered all over the country. There are a number of inconsiderable brooks, but no navigable river. The hills and valleys are frequently clothed with wood, among which may be found at intervals open tracts covered with soft and spongy moss, and called marshes, the slow drainage of which supplies the lakes during the dry season.

Mr. Bramston has laid before us a series of experiments and observations on the frozen soil at Martin's Falls in Albany River, about 300 feet above the sea level. It seems that a portion of the soil is at a slight depth permanently frozen, but in sunny situations the thaw in summer is complete. The line of perpetual frost commences on the coast between Equan River and Cape Henrietta, and takes a north-westerly course to the Rocky Mountains.

N. W. Coast.—An historico-political memoir on the north-west coast of North America, drawn up by Mr. Greenhow, and published by the government of the United States, contains an interesting account of the several tribes and nations by whom the disputed tract of country has been inhabited or visited from the time of its discovery. The author describes the western coast as bounded by a continuous chain of mountains, and the interior of the continent to a great distance as traversed by lofty ridges with small intervening valleys or plains. The Rocky Mountains, the chief of these chains, divide the territories drained by the Atlantic from those whose waters flow into the Pacific, and lie throughout their course, which is from N.N.W. to S.S.E., nearer the western than the eastern coast: the Chippewyan mountains are part of the same chain. Three ridges, one of which is known by the name of the Snowy Mountains, join the principal chain near the 42° of latitude, and near their junction is a very remarkable depression called the Southern Pass. Mr. Greenhow assigns to Oregon, comprehending the territory drained by the Columbia River, a similar character, and divides it into three regions separated by three mountain ridges: the Blue Mountains which constitute the central chain are crossed by both branches of the Columbia; they are chiefly volcanic: the third region

or high country of Oregon, westward of the Blue Mountains, is dry and sterile: the southern part, a desert of steep rocky hills and narrow sandy valleys, contains many lakes, principally saline; and gives rise to all the great branches of the Columbia. The author, after tracing the course of that river, states that from each of the two points between which it flows into the Pacific, a sand-bar runs out, over which the meeting of the waves with the river torrents produces a terrific line of breakers.

The attempt of Capt. Mudge and Mr. Featherstonhaugh to define by surveys and operations the uncertain territorial limits of Great Britain and the United States of America, has thrown new light on the physical geography of the tract in question: Mr. Gallatin has written a memoir upon the same subject accompanied by eight maps.

United States.—The Consul-General of Sweden, M. Arfredson, has written Travels in the United States. An account of the expedition of Domenique de Gourgues to Florida is about to be published in the collection of early Voyages of M. Ternaux Compans. Dr. Morton's Crania Americana is a welcome offering to the lovers of comparative physiology.

Mexico.—M. de Kazawinski is gone back to Mexico, commissioned by the Russian government to collect objects of natural history. Messrs. Linden and Funck are prosecuting zoological and botanical investigations in the same country on behalf of the Belgian government. M. Galeotti, attached to the house of Van der Maelen, and Member of the National Institute of Geography in Mexico, set out in 1835 to explore that country, and returned to Brussels last year with an immense store of information on physical geography and topography, statistics, the races, manners, and languages of the Indians, the nature and amount of population, and the distribution of the inhabitants according to climatic zones, which, in Mexico and intertropical America, may be thus classed—1st. torrid, where the mean temperature ranges from 20 to 25 cent. 2nd. temperate, ranging from 16 to 20 cent., comprising the tract of the Cordilleras, elevated between 3500 and 7000 French feet, and the plateaux from 5000 to 7500 French feet. 3rd. frigid, which admits of two divisions, moderately cold and extremely cold—the former from 7000 to 8500 feet above the sea-level, and the latter from 10,000 to 11,000, the highest land inhabited. These observations are accompanied by researches into the geographical distribution of plants and animals, in relation to mean temperature. M. Galeotti has corrected many of the positions in Humboldt's Atlas, especially near the Pic of Tancitaro, where villages and hamlets placed on the east of the volcano of Jorullo lie really to the west of it, as for instance the great village of Uruapan. M. Galeotti intends to publish detached papers on these subjects and a geological map.

M. Ghiesbrecht will be despatched immediately to Mexico, if he is not already on his way, to complete M. Galeotti's investigations; having already made a zoological excursion in that country.

From Colonel Lloyd we have an account of an Indian race inhabiting Panamá, and from Dr. Scouler a paper on various other tribes of the north coast of America, with Vocabularies of sixteen languages far more extensive than any previously published.

It is reported that a French company has been organised for the purpose of cutting a canal across the Isthmus of Panamá.

Of the papers received from the Hydrographical Office at the Admiralty, one of the most interesting from the number and precision of its details recounts an expedition by Mr. Lawrence up the river and lake of San Juan de Nicaragua. The travellers, after carefully observing the rate of the current, crossed from the lake to the Pacific. Proceeding from Nicaragua, through a thick wood, and then over an extensive savannah, they came to a range of mountains, from one of which, 800 feet high, they had a beautiful view of the Pacific, about 3 miles off; and soon after found themselves unexpectedly at a little cove called El Cacola. To the south of this spot, at the distance of a league, they arrived at last at the place they sought, the port of San Juan. The tide rises here about 12 feet. According to Mr. Paily's levels, from Puerto de San Juan to Rio de Lacas, near Granada, the level of the lake is 128 feet 3 inches above the Pacific.

British Guiana, comprising the basins of Berbice, Demerara, and Essequibo rivers, is separated from Dutch Guiana or Surinam, on the south-east, by the river Corentyn. On the north-west, a line of demarcation not yet perfectly agreed upon divides it from the Columbian territories, while the extensive boundary lines which separate British Guiana on the south-west and south from the Portuguese are, it appears, equally liable to dispute; the reputed boundary not coinciding with those natural land-marks, to which, in the absence of special agreement, reference must always be made in the adjustment of territorial divisions.

Mr. Schomburgk, having completed the publication of his Historical, Geographical, and Statistical Description of British Guiana, has returned to that country on a special mission, having for its object the adjustment of these questions; and her Majesty's government, kindly acceding to the request of the Council, has allowed him to investigate also the sources of the river Orinoco. He arrived at Demerara on the 24th of January.

Brazils.—Dr. Lund has been travelling for some years in the

Brazils at the expense of the Royal Society of Copenhagen, with a view to natural history, and has transmitted home several communications, which will be found in the Transactions of that body: among them is a treatise on the discoveries of the early inhabitants of the northern part of South America, and several papers on geology. Of the fossil animals, whose bones have been discovered in caves, one which is new to us as a fossil corresponds with a recent type found exclusively in that country. From this and similar phenomena observed by Sir Woodbine Parish one might almost be tempted to infer that while, since the period of diluvial action, the northern latitudes have been subject to extraordinary vicissitudes of climate, no corresponding change has taken place in the southern.

The earliest account of the river La Plata, drawn up by Sebastian Cabot, is one of the many rarities about to be laid before the public by M. Ternaux Compans.

Australia.

Mr. Eyre, who left Adelaide on the 18th of June, in the hope of being able to plant the British standard on the Tropic of Capricorn, in long. 135° or 136°, has met with an unexpected obstacle to his progress in a crescent-shaped lake supposed to be Lake Torrens. The length of this piece of water exceeds 400 miles: its breadth is inconsiderable, but the shores, composed of soft mud and sand, cannot be approached. Our enterprising traveller directed his steps therefore to Streaky Bay, in the hope of finding on the west the means of resuming his original direction.

The House of Commons has printed a despatch from Sir George Gipps, governor of South Australia, with an appendix, containing, first, a report by the deputy surveyor-general on the Clarence river; secondly, a report of the state of the survey at Moreton Bay; thirdly, a report on the dividing range of New South Wales and the recently-discovered region denominated Gipps' Land, by Count Strelecki; and, finally, a report of Mr. Tyers's survey undertaken with a view to establish the somewhat uncertain position of the 141st meridian degree of E. longitude being the prescribed boundary between New South Wales and South Australia. The result confirmed the account of Sir Thomas Mitchell; but Mr. John Arrowsmith has appealed against the accuracy of Mr. Tyers's decision, so that the question cannot yet be said to be set at rest. By this despatch it appears that the counties into which the colony has been divided pursuant to the general instructions sent out under the sign-manual, serve no other purpose than

that of marking the boundaries of location, *i. e.*, the limits beyond which land cannot be sold. There is also a map showing what government surveys have been carried on in the neighbourhood of Port Philip. Maps illustrative of the several reports are appended, and the table of a trigonometrical survey between the river Glenelg and Batman's Hill, Melbourne.

Of Gipps' Land, its discoverer Count Strelecki has given a very animated description. It has an extent of 5600 square miles and upwards of 250 miles of sea-coast, and eight rivers; a navigable lake and lagoons bisecting 100 miles of its length: to form communications over the whole district requires only the construction of bridges, and the occasional clearing of bog and brush. The richness of the soil and pasturage can scarcely be surpassed; and the ranges of hill are easy of ascent. According to Count Strelecki's description this region presents a most inviting prospect to settlers, more especially cattle-breeders, the natives being inoffensive and gentle.

Several isolated hills, which rise from a barren plain of considerable extent, separating Port Philip from Mount Shadwell, are supposed by Mr. Tyers to be volcanic. We believe that these are the first traces of volcanoes which have been found in South Australia.

Much of the remaining matter contained in this document is original and interesting; but I shall not proceed any further in my notice of it, since, having been published, it is accessible to all who may wish to consult it.

The Sydney Herald announces the discovery of a very fine river issuing from a point between Clarence River and Moreton Bay. It is said to have 30 feet of water on the bar; and Mr. Scott, who explored it upwards of 30 miles, describes the banks as extremely beautiful and abounding in cedar-trees.

New Zealand.—Capt. Cecille, a French officer, already mentioned, who was employed in the southern hemisphere upon objects connected with commerce, has constructed a very accurate plan of the Chatham islands and the principal bays in New Zealand. He also reconnoitred the islands of Prince Edward, Crozet, St. Paul, and Bass.

The seat of government for New Zealand is to be the town of Auckland, situate in the estuary of the Thames. Mr. Sigor is Surveyor-General, having Capt. Symonds under his orders.

The New Zealand Company has added to its possessions the ownership of Chatham Islands, a group lying in latitude 44°. 5′, and about 300 miles E. of Port Nicholson. The extent of this acquisition exceeds 700,000 square acres. It consists of three islands, viz., Chatham Island, Pitt's Island, and an islet of smaller dimensions to

the S. E. There is a safe harbour and a sufficiency of water; the climate is good, and the soil fertile.

Van Diemen's Land.—It is much to be regretted that government has not recognised *Tasmania*, as the name of that island improperly denominated Van Diemen's Land. The occurrence of a second Van Diemen's Land on the northern coast of Australia occasions confusion; and since Tasman, not Van Diemen, was the first discoverer of the island, it would be but just that whatever honour the name confers should be given to the former navigator.

On the *Asiatic Archipelago* a great deal of interesting, and, I believe, original information is to be found in the work of M. Lafond de Lurcy before mentioned, more especially on Sumbáwah, Lombok, Flores, and the Philippine Islands.

He describes as inhabiting Borneo, Nikobar, Timor, &c., a race of black pigmies, whose height seldom exceeds 4½ feet. They are mentioned by Legentil, in his Voyage Round the World, in 1765; Walkenaer notices them, but not as Lilliputians; and they would seem to have escaped the searching scrutiny of Prichard.

An outline of the proceedings of Mr. Brooke up to the 9th of June, 1842, has already been laid before the Society. In the early part of this year Mr. Treacher, who accompanied the expedition to Celebes, returned to England, with a small but valuable packet containing eighty plates of birds and twenty views in that island, executed by a Danish artist, who accompanied the Royalist, a chart of the bay of Boni, from surveys, the field-books verifying the chart, tidal and thermometric registers, and two Singapore newspapers, containing a brief account of Mr. Brooke's two cruises, drawn up by himself. Mr. Treacher was unfortunately shipwrecked, and lost the large and valuable collection of skins of birds and quadrupeds amassed in Celebes. The latest account of Mr. Brooke is dated Singapore, Feb. 20, 1841: he had just finished a six months' cruise on the W. coast of Borneo in the vicinity of Sarâwah, and meant to return to that country immediately, having established a firm and friendly connexion with the inhabitants.

Mr. Brooke has communicated to the Society his remarks on Celebes, in which are detailed some of its physical features. The accounts given of the dangers of the channel between this and North Island are, he says, unfounded, the passage being deep and clear, and constantly used by the natives in preference to Salayer Strait. M. Lafond de Lurcy has thrown out a suspicion that the rocks laid down in the charts of the Bay of Boni are fictions introduced by the Dutch for the purpose of keeping the trade to themselves; Mr. Brooke states that the centre

of the bay is choked by coral reefs, which leave a passage, seldom exceeding a mile in breadth, along the shore; but that the northern portion of the bay, though affording no anchorage, is easily navigable.

Tenasserim, Siam, Barma.—Dr. Richardson quitted Maulmaïn on the 18th of December, and proceeded by Nyaung-benseit, Kyaik-mare, and the teak-forests of Attran and Kyaïng to Nat-Kyaung, where he disembarked and continued his progress by land. He describes the Attran and the Zimmi as very uninteresting; the course of the latter river is extremely tortuous, flowing through an alluvial country, with high woody banks.

On the 18th he arrived at the Minnamoï, which flows into the Dayaik and rises in the hills E. of Ye. From Kamburi, where the Sisawot joins the Minnamoï, he crossed the river to Tatakau village, recrossed it at the Siamese village New Mongstein, the old being in ruins, and proceeded to Nakut-chatti, where, on the 5th of February, he embarked for Bankók. The shores are low: the river divides at the little village of Mongstein into two branches, one of which flows westward to the sea; on the other, which flows to the N.E., are some Chinese sugar-works. Following this branch Dr. Richardson reached the town and fort of Bankók, where there is an English factory.

Having thus rapidly sketched the latest geographical labours as regards books and travels, I shall now briefly enumerate some of the more important maps and surveys which have been executed or are now in progress.

EUROPE.

Count Schweinitz has lately determined a very considerable number of heights in Bavaria: an account of these will be found in Berghaus'. Annals, No. 181. The cadastral map of Bavaria is probably the most perfect ever attempted; of its colossal size some idea may be formed when I state that there are eight circles in that kingdom, and that the delineation of one of these will require, as we are informed by Dr. Martius, 12,000 sheets: to every sheet is annexed a pamphlet containing an index of places, a practice which ought to be universal.

In the duchy of Baden three base lines have been measured at different times; one from Schwetzingen, another near Salem on the lake of Constance, and the third from Ettenheim, but none of these were deemed sufficiently exact for the survey now going on. The new bases of triangulation begun in 1819 were completed in 1827. The scale

is as $\frac{1}{250,000}$ to reality. The altitudes have been determined by measuring the vertical angle with an 8-inch repeating circle: the levels, ascertained with great precision, are measured from the floor of Strasburg cathedral, 485·84 Baden feet above the level of the Mediterranean—a useful hint to geographers: it is much to be desired that the height of the floor of all the cathedrals of Europe above the sea-level were laid down with equal exactness.

The trigonometrical survey of the kingdom of Hanover by Capt. Papin occupies sixty-five sheets: the scale is 3 inches to the geographical mile.

A very excellent map of the Electorate of Hesse has been executed by Reusse, in twelve sheets; but it is only a road map, and does not represent the configuration of the surface: its scale $\frac{1}{96,000}$ to reality.

A new government survey of the Duchy of Nassau has been proposed, and the necessary funds voted for its execution. A similar survey of the Duchy of Saxe Coburg Gotha is accomplished.

Colonel Oberreit has presented to the Society two copies of his splendid map of Saxony.

The determination of the relative levels between Berlin and the German Sea, upon which Major Baeyer and Mr. Bertrand have been employed during several years, is completed, the difference in their results not exceeding $\frac{1}{16}$ of a French foot.

A new survey has been made of the north coast of Prussia, with special attention to the lighthouses.

Herr von Oelsfeld, at Berlin, has established, under the title of Der Karten-Freund (the Map-Fancier), a review of all new maps.

Switzerland.—The geography of this country has received great and important additions. A geometrical description of it has been published; that is, the results of the trigonometrical measurements, which have been executed with such care, that the length of a side common to one of the Swiss triangles and to one of the French corresponds in the two surveys to within one-twentieth part of a metre in a length of 35,997 metres, while on the Italian frontier the common sides of the Swiss and Austrian triangulations correspond also within a small fraction. Colonel Echmann's account contains an exposition of the operations, the catalogue of the triangles, and their measures, the heights of twenty of the principal lakes of Switzerland, &c.

The most important part of the labour of a grand trigonometrical map of Switzerland is therefore happily accomplished.

Neufchatel.—Every admirer of maps is acquainted with the beautiful map published some time since by Osterwald: the value of this

production is greatly enhanced by its conversion to geological purposes by M. A. de Montmollin; the map so appropriated will be found in the 2nd volume of the Society of Natural Sciences of Neufchatel.

Captain de Michaelis, a distinguished member of the Geographical Society of Frankfort, has engaged to survey the Canton of Arau.

A small but very useful map of the Canton of Thurgau has been brought out by Captain Sutzberger—its scale is as $\frac{1}{156,500}$ to reality.

Canton of Geneva.—The scale of the recent survey of this canton is $\frac{1}{12,500}$; the engineers employed were Messrs. d'Osterwald, Wolfsberger, and Bétaut, under the direction of the Quartermaster-General, Col. Dufour. The position of ninety-five points has been determined by a great number of triangles, and their perfect agreement with the French triangulation leaves no doubt as to their accuracy. The roads and watercourses have been separately levelled. The details have been executed by the levelling compass, and the slopes are expressed by horizontal curves of equal altitude, being 4 metres above one another; this gives a most accurate knowledge of the undulations of the ground, and renders the map particularly useful for all great projects requiring levels. The engraved map indicates the heights above the sea of *seven hundred* different points, and also the several soundings of the lake of Geneva.

By means of the curves mentioned, the following results are obtained. If the lake, the mean height of which is 375 metres above the sea, were to rise 20 metres, it would overflow 8200 pous, or nearly a tenth part of the whole canton. Charny, the only village lower than the lake, Carouge, Versoix, and the city of Geneva, except in its most upland parts, would be under water. A further rise of 20 metres would but cover 6300 pous more: hence it appears that the most rapid slopes are those between 395 and 415 metres above the sea. Lastly, a rise of 435 metres would overflow 25,000 pous, with the most considerable villages. One-half, however, of the canton is situated above 60 metres higher than the surface of the lake: these lands form plateaux.

The engraving, on half the scale of the drawing, has been executed by Bressanini, an able artist, employed formerly in the Military, Geographical, and Statistical Depôt of Milan.

It was mentioned on a former occasion that Colonel de la Marmora had presented to the Society an enlarged and corrected edition of his beautiful map of Sardinia. An analysis of that work is given in the 'Nouvelles Annales,' and the Geodesic operations are described in Berghaus' journal.

A survey of Portugal is in progress: several positions have been astronomically and trigonometrically determined.

A cadastral atlas has been composed from the local maps of the re-

spective commmes in Belgium, upon the scale of $\frac{1}{5000}$; the director of the cadastre has constructed a topographical map of East Flanders, in twenty-five sheets, and M. Desterbecq a map of the Netherlands, on the same basis.

The Corps des Ponts et Chaussées have been engaged for several months in laying down a series of levels through the Belgic territory.

Of the maps which have issued from the splendid establishment of M. Van der Maelen the following are among the most recent.

1. A single sheet map, showing the boundaries of Belgium, as determined by the twenty-four articles.

2. A statistical map of the same country, by X. Heuseling.

3. An ecclesiastical map, by P. T. Gennant, in six sheets, beautifully coloured.

4. A general map of Belgium and Holland.

5. The environs of Brussels, in nine sheets: scale $\frac{1}{10,000}$.

6. Map of the sluices around Brussels.

7. Ditto, showing the routes of the coal barges.

8. Picturesque atlas of railways, by Alphonzo Wauters, containing 16 maps and 400 views.

9. New atlas of the kingdom of the Netherlands.

10. Kingdom of the Netherlands.

11. Map of Central Europe, showing the railways completed or proposed.

12. A series of maps for the use of infant-schools.

The Royal Society of Copenhagen is preparing a map of Denmark; and Professor Schumacher, of the Duchy of Holstein; a special map of Fyen Island (Fiorica) has been constructed by Captain Mausa.

The government survey of Western Russia by General Schubert, in sixty sheets, on the scale of $\frac{1}{420,000}$, extends westward as far as Kazan; and several reports have issued from the same office, detailing the progress of military topography.

In 1830 an annual grant of 10,000 rubles was made to Messrs. Struve, Maupertuis, and Schwenenberg, engaged to measure a degree of the meridian in Finland: the grant to be continued for ten years.

On the 30th November, 1833, the old divisions of Spain were superseded; and in the following year a treatise was published by Don José Mariano Balleio, explanatory of the principles on which the new divisions were established. The Spanish main now comprises forty-seven provinces, and the Balearic and Canary Islands two more: but it would be in vain to seek for these in the most accredited of our English maps.

The kingdom of Greece has experienced equal neglect: by a decree, dated April 15, 1833, that kingdom was divided into eight nomarchs,

or nomi, extended afterwards to ten. These nomi were subdivided into 54 eparchs, and 468 communes. By a later decree (dated 1836) the country is now partitioned into thirty governments, the names and boundaries of which, I am sorry to observe, have not yet found a place on any map with which I am acquainted.

Turkey in Europe.—A fine map, beautifully executed, of European and the contiguous part of Asiatic Turkey, in twenty-one sheets, by Lieutenant von Weiss, was published in 1820; but, as far as I recollect, has not been yet introduced to your notice. Scale about 9 English miles to the inch.

Asia.

An able map of the Troad, executed by Lieutenant Brock, and several masterly sketches by Lieutenant Greaves and the officers under his command in the Grecian Archipelago, which have been kindly exhibited at one of our general meetings, are, I am satisfied, still fresh in your recollection.

Hindostan.—Since our last Anniversary, sheets 62, 94, and 108 of the Indian Atlas have been published; and the surveys sent home will complete 75 and 77, and very nearly sheets 56, 74, and 107.

Colonel Everest is engaged in remeasuring part of the earlier sections of the meridional arc, his instruments being much superior to those used by Colonel Lambton.

The triangulation of Northern India is proceeding steadily; two of the meridional series are already completed.

Numerous surveyed routes through the countries recently traversed by the British armies, on the borders of India, Persia, and the Oxus, have been compiled into a general map of the N.W. frontier of India, published by order of the Court of Directors.

The nautical directions for the Red Sea have also been published; together with a chart of Kooria Mooria Bay.

Plans of all the principal harbours and anchorages in the Red Sea and the harbour of Mergui are preparing for publication.

The survey of the sea-face of the Sunderbans by Captain Lloyd has been completed.

A vessel has been appointed to survey the coast of Orissa from Point Palmeïras to the Húglí, and another for ascertaining the dangers off the islands of Cheduba.

In the 'Nouvelles Annales des Voyages' we find a journal of the embassy to Bútán in 1837-8, edited by Mr. Griffith, who accompanied it in the character of an attaché, and the Chevalier Olloba d'Ochoa has increased the interest of this paper by his notes and by a map of Bútán,

showing the route of Captain S. Turner in 1783, and of Captain Pemberton in 1837-8. On his return to Calcutta Captain Pemberton constructed a map of the eastern frontier of the British dominions in India, which has been lithographed by order of the government. This map, though coarsely executed, appears to be formed of the very best materials that could be collected, and is a valuable contribution to geography. Among its peculiar features may be mentioned an annular lake, called Lake Yorbrogh Yumtso,* supplied internally by three brooks, two of which run to the S. and one to the N., and externally by two other brooks running from W. to E.; its only issue being the Wanjang, which runs to the S.

Africa.

The map of Mr. M'Queen has been already noticed.

America.

United States.—By the Report of the Secretary of War to the American Congress, towards the close of last year, we learn that the survey spoken of in an earlier report is completed, and that a map has been constructed which embraces that portion of territory which lies *between the Mississippi and Missouri rivers* from their confluence to the (assumed) northern boundary of the States, and limited by the parallels of lat. 39° and 49° N., and the meridians 90° and 100° W. of Greenwich. The map is based upon 245 astronomical observations, on actual surveys, and on the best information which the exploring party could procure of such small portions of the Indian territory as they were prevented from examining by the inevitable dangers attending the attempt, from want of means and time.

A very extensive *series of barometrical observations* had been made, and the zealous co-operation of men of science occupying stations in the United States had enabled Mr. Nicoles to compare his own results with those of others in different quarters of the Union, and thus accurately to determine the *relative level of the whole region* represented by the map, as well as its *elevation above the ocean*, thereby indicating the climate and face of the country.

The map will be accompanied by a report calculated to give an accurate idea of that distant country.

This announcement is the more gratifying as it appears probable that measures will be taken to extend the survey by degrees to the sources of the Missouri and across the Rocky Mountains to the Pacific; and it is understood that in future all surveys will be accompanied by astronomical and barometrical observations.

* Or Palté.

The admirable map which Colonel Codazzy has constructed of Venezuela is in the hands of Parisian engravers.

At the instance of Mr. Ellauri, Uraguay minister at Paris, a lithographic map of the state of Uraguay, constructed by M. A. Roget, who is consul there, will speedily be published at the expense of the French government.

Australia.—The trigonometrical survey at Moreton Bay, under Mr. Robert Dixon, proceeds with all possible celerity. A network of triangles has been already carried over a surface of 1200 square miles. A very considerable portion of the country between that settlement and Richmond river consists of extensive plains; and Mr. Normanby, the surveyor, under harassing difficulties, has measured upon one of these a base-line of three miles as a foundation for the principal part of his trigonometrical operations. His assistant, Mr. Stapleton, while writing in front of his tent, was surprised by the natives, plundered, and murdered. I have already noticed other surveys that are going on in the same part of the world.

The method of showing hills and valleys in relief by stamped paper, first employed by M. Ravenstein and M. Bauerkeller at Paris, has been greatly improved by M. Kremmer, of Berlin. This artist has completed, or nearly completed, two works well deserving your attention; the one a terrestrial globe 4 feet in diameter, the other a representation in relief of the valley of the Rhine between Frankfort and Bonn, together with the country adjacent, so that it comprehends the entire duchy of Nassau; it is 12 feet in length by 10½ feet in breadth, and the scale $\frac{1}{30,000}$ of reality.

M. d'Avezac has published a reply to Mr. Holmes's objection noticed in my address last year in regard to the Cartes Catalanes: that they existed in the library of Charles V. of France every one admits; but the question is what became of them afterwards? "They have been "traced," says M. d'Avezac, "through the libraries of Blois and Fon-"tainebleau to that of Paris; and this continuous chain of evidence clearly "proves that the date of 1375 is the genuine date of this document."

Having now completed the historical portion of my address, I wish, after the example of last year, to submit to you a few observations of a more philosophical cast. Allow me then to remind you that in Geography, as in every other pursuit, the only sure way to attain our object

is to conceive distinctly, in the first instance, what that object is. Exertion insures only fatigue; to insure success exertion must be well directed: science can be cultivated to profit only when cultivated upon principle: without an enunciation there is no problem; without a definition no steady meaning; without a solid basis no firm superstructure.

The only sound basis for geography in general is physical geography. Civil, political, and all other kinds of geography are merely grafts upon this original stock. Our first aim should be to construct, I will not say a perfect map of the surface of the earth, but rather a perfect model; I know that this cannot be constructed at once, nor perhaps in the course of centuries; but we should always look to it as the goal of our labours, moving, however slowly, in the right direction.

The Ordnance Map of England being found' insufficient for the present and ever-growing wants of the country, a proposition has been brought forward to increase its scale from 1 to 6 inches to the mile, the scale adopted in that of Ireland. Rejoicing as I do in this event, I cannot forbear saying that, before any final decision is come to, Government should consider well whether a 6-inch scale will be adequate to all the objects for which such a map is required or likely to be required, remembering always that by reducing a large map you may diminish its imperfections till they become perfectly insignificant, while by enlarging a small one you may magnify them till they become monstrous; this, however, is a question of economy rather than of science.

That the *proposed* Map should clearly represent the surface-form of the country, follows necessarily from what has been said; but it should comprise more: it should be constructed not for one purpose only, but for all imaginable purposes; the names and signs and boundaries inserted in it cannot be too numerous, supposing of course that the positions of these are correct; the only mischief to be apprehended is lest they should be too few: the desideratum being not selection, but accumulation. The value of a colossal map of this miscellaneous character, too bulky to be often consulted, too costly to be purchased by many, would consist mainly in the facility which it would afford to artists to extract from the immense quantity of matter contained in it, such information only as belonged to any one head of inquiry, and transfer that information to maps of a convenient size, so as to illustrate every subject at last, but one only at a time. From this, which I call, for the sake of brevity, a Parent Map, might be raised a large progeny applicable to the demands of all public boards and private individuals: financial maps, municipal maps, military maps, orographic, hydrographic, geological, metallurgic, zoological, botanical, agricultural maps, county maps, parish maps, road maps, historical maps might all be composed with great facility at very

little comparative cost, and far more excellent than any which at present exist, from this one great national map of reference, which need not, perhaps, be engraved for publication.

A Map of the nature here suggested should, in respect to accuracy and completeness, possess in a great degree the characteristic merits of a photogenic drawing, in which there is no discrimination, no error, no omission: it should be, in the first instance, as far as possible an accurate portrait of the present; which, by lapse of time, must soon become the past: the Original would then resolve itself into an historical document; but a copy produced by the electrotype, allowing the omission of all that had passed away, and the insertion of all that had sprung up in the interval, might now become, what its predecessor had been, the mirror, as it were, of all existing objects.

Having incidentally mentioned the art of photogenic drawing, I cannot omit to notice one obvious advantage which belongs to it, an advantage which, in deference to short-sighted considerations, has, till lately, been but too often disregarded in the conduct of national surveys. The delineation of a photogenic drawing is immediate; that of a *survey* slowly progressive. I could name a survey which has already outlived its jubilee,—if that circumstance did not entitle it to plenary indulgence. The face of a country undergoes strange alterations within a period of fifty years.

I return to the subject of mapping *generally*; of that beautiful contrivance which I know not whether to class with the fine arts or with the exact sciences, so intimately is it connected with both.

Mapping among its other merits may be designated the perfection of short-hand: many folio volumes of letter-press would not contain all the precise and various intelligence, the mutual relations and affinities, the contrasts and approximations, which are simultaneously brought into view in a single-sheet map of any kingdom.

Mapping considered in the light of short-hand has another advantage: ordinary stenography is for the most part a secret art, with difficulty legible even to him who employs it: geographical stenography is not only intelligible, but immediately understood by entire Christendom.

We have in this species of composition, as in music, algebra, chemistry, the elements at least of what with some little laxity of expression may be called an universal language. May not this language be further improved?

How much confusion would be avoided were the standard of horizontal dimension an universal standard! and, amongst geographers at least, there seems no good reason why it should not be such. Who has

not been embarrassed by the laborious, if not fruitless, attempt to compare maps of different countries, or of the same country, constructed by persons of different nations? how often have we not been foiled in our attempts to reconcile the English league to the Spanish, the Spanish to the French, the French to the German, the German to the Italian! how indifferent is the comparison, even when assisted by tables of numbers expressing the relation of their respective lengths!

The geographic or nautical mile and its subdivisions, when not used exclusively, ought to be an invariable accompaniment of *local scales*, or of the numbers which indicate the proportion between the dimensions of any given map and those of reality: it was constantly employed by the early geographers; and those who feel no great respect for antiquity may yet perhaps allow that the circumstance of its dimensions being *universally known* demands the continuance of its use. On this ground, its universal intelligibility, M. Jomard proposes a new application of the geographical mile, expressing by it and its subdivisions the amount of heights when accompanied by a positive sign, and of depths when accompanied by a negative.

Longitude.—Variety of the starting point for longitude is another source of confusion to the scientific geographer as well as the practical navigator: Nature has pointed out a common "start" for the divisions of latitude, but not of longitude: frequently we find the meridians traced on a map, and not a single note to say to what point on the earth they refer: how fruitful a source is this of inconvenience to the landsman, and absolute danger to the mariner! Some common "departure," from which to reckon longitude, ought to be forthwith established; and if the national pride and vanity of men so far prevail as to prevent geographers from abandoning the old systems founded upon patriotic considerations, let them at least, for the sake of general intelligibility and common interest, give two columns of longitude, one referring to the universal, the other to their national zero. It matters little where this universal zero is fixed, whether upon the ocean or dry land: the one thing needful is this:—that some one accessible point on shore should be chosen, if not for zero, at least as being at some definite distance from zero: from this point all the now existing zeros of longitude would be at computable distances, capable of being referred to the universal zero, in relation to which longitude might in future be everywhere determined.

There is yet another discrepancy in respect to the measurement of longitude, which I could wish to avoid. Why should the earth be considered in some of our reckonings a sphere, in others two hemispheres? Why in a measurement of this kind should we have two departures, an

eastern and a western? Why should not terrestrial longitude, like celestial, be measured all round the globe? Is it not more simple and natural to say 185° longitude than 175° West longitude?

We choose the observatory of Greenwich as the first meridian, the French that of Paris—Paris being 2° 20′ 24″ E. of Greenwich. The great meridian, by the most ancient *Greek geographers*, passed through the Fortunate Islands, now the Canaries—thence it was translated by the Arabians to the uttermost part of the western shore. The best of them brought it back again to the Canaries, and placed it on the Peak of Teneriffe, the supposed Junonia of Ptolemy.

Ptolemy, as Marinus the Syrian cited by him, and the ancients before them, fixed the great meridian in Hera, or Junonia (Canaries). Of these islands six only were known to Ptolemy and Pliny, the seventh not being then discovered. Our own countrymen removed it from the Canaries to the Azores, under the idea of this being the magnetic meridian, which it is not; and if it were, the reason would be bad and the alteration objectionable.

Stevinus, a Dutch geographer, brought it back to the Canaries, observing that one of these islands should be fixed upon—a change which he terms *exiguus quidem sed notabilis et perpetuus.*

Johnson, in his lesser globe of 1602, makes the great meridian pass through Cervo and Flores—but in that of 1616 through the Peak of Teneriffe.

The difference of longitude from the Pico to the Arabic meridian is 10° more E. according to Abulfeda—from Pico to the Island of St. Michael's 9°—from Pico to Cervo 15°, and both so much more W.

Temperature.—Records of temperature, if not from observation with the centigrade, ought always to be reduced to that scale; that the distance between almost the only natural constants of temperature should be divided decimally seems so natural that it is wonderful how any other systems should have been ever proposed, and certainly not desirable that any other should be supported.

Atmosphere.—Should the plan of M. Jomard, for recording heights and depths, be adopted, barometers might be so divided that, after the usual corrections, the quotient would remain in terms of the geographic mile; as it is, we are driven to the use of a barometer, divided to the inch of the country in which it was made, and have no other resource than to reduce the result into *our* own standard of length, and as many more standards as we have patience and industry to work out.

Symbols.—Various as possible form (and therefore infinite in variety), symbols, whether used individually or collectively, may be applied to denote any conceivable quality or quantity of matter. Why then not have

a more perfect system of symbolical notation in geography? Why should chemistry, botany, music, heraldry, possess exclusively the advantage of a system which can be made to express with equal facility properties or quantities, variable or invariable, simple or mixed, in every other science?

Nomenclature. Orthography.—Much might be said (and were I to follow the natural course of my subject much should be said) on the subject of nomenclature, slightly touched upon in my address last year: but time flies, and your patience must ere now be on the wane; we will therefore pass it over: the no less important subject of the orthography and pronunciation of Oriental, Occidental, Australian, and Polynesian names, must be passed over for the same reason.

I never look at a map of location, I never read the description of a settlement, without feeling regret that rectangular parallelogramatic boundaries to farms, districts, and counties, should have been preferred to the comparatively permanent divisions and subdivisions traced by the hand of nature: they impress me rather with an idea of mutilation than of anatomy.

Having now enumerated the principal subjects upon which I am anxious that geographers should come to an immediate and final understanding, I proceed to notice the arts directly relating to our science, too many of which, I regret to say, are still held in geographical abeyance.

Engraving on Metal.—Engraving on metal, the possibility of hardening it, and the power, by means of the electrotype, of multiplying plates in all stages of their progress, of every degree of refinement and in every metal which is soluble, bid fair to render to geography, as well as to many other sciences, the most important service.

Lithography, Zincography, Stenciling.—Lithography, its sister-art Zincography, and the several subordinate arts of tracing and transfer, retransfer, and transposition by transfer (already powerful aids to the engineer, the architect, and the surveyor), are of great importance as regards the construction of maps, particularly when despatch is of consequence, and not perfect accuracy. Stenciling also may be, occasionally, useful, especially for the introduction of additional matter.

Colour.—However great is the importance of *colour* in the production of "useful effect," its power has been yet but imperfectly appreciated or developed in connexion with map engraving: the system of register printing affords ample scope for its more general application.

Engraving on Wood, rendered more effective by the use of moveable blocks, ought to be more frequently employed.

Gypsography, too, promises to become a useful auxiliary.

Moulding or Modelling, Embossing by expression or transformation, Casting in the metals, in plaster, or in pulp, with many other operations of the same character, ought to be made more subservient to the purposes of geographical science.

Transparencies.—The effects of transmitted and reflected light, sympathetic and contrasted colours, sheets to remove and replace, printing in gum, colouring by powders, and a variety of other expedients (long since applied to the purposes of art generally), will, I trust, be no longer neglected by geographers.

Photography.—I mention last, because I trust it is the least perfect, the art of photography. If one art more than another conveys to the mind a perception of the ideal, of the τὸ καλον, surely it is photography. Derived from a process of reflection, it gives permanence to images in either an increased or diminished ratio; distance, foreshortening, and perspective are to it as easy as the plainest operation of the draughtsman's pen; it acts, as it were, on the impulse of the moment, and with unerring certainty; rivalling, or rather excelling electrography itself in minuteness and exactitude. It is worthy of observation that these beautiful discoveries, so nearly contemporaneous, so similar, if not in their operation, at least in their effects, result from kindred causes: the agent in one case being a metallic solution, in the other an affection of the reflective properties of the surface of a metallic solution.

Gentlemen, I will detain you no longer. I thank you for the patience with which you have heard an address tedious necessarily, from the multiplicity of its details, and I am afraid unnecessarily also, from my want of skill in their adjustment. I am still *more* thankful to you for the confidence which placed me in this chair, and for the support and assistance which have been unsparingly afforded to me during its occupation. I rejoice in the prospect now opened to you of greater efficiency in the person of my successor; and shall carry with me into retirement the desire which I have ever entertained, to advance, as well as to witness, your well-earned prosperity.

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1836.

Mons. D'AVEZAC . . . Paris
Counsr. and Comm. J. J. da Costa DE MACEDO, Sec. Roy. Acad. Scien. Lisbon
Gen. Don Juan ORBEGOSO . Mexico

1837.

Prof. Adolph ERMAN . . Berlin
Don M. F. DE NAVARRETE . Madrid
Adml. Baron WRANGEL St. Petersburg
Professor Paul CHAIX . . Geneva

1838.

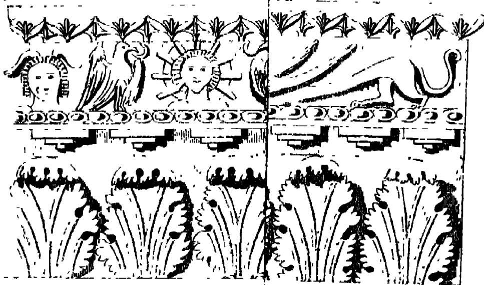
Colonel LAPIE . . Paris
Don Pedro DE ANGELIS Buenos Ayres
Colonel OBERREIT . . Dresden
Colonel SKRIBANECK . . Vienna

1839.

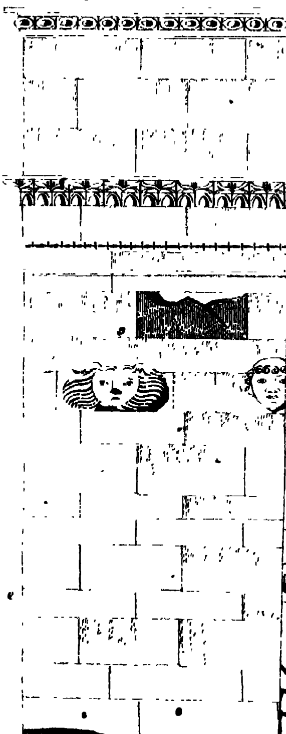
Professor C. C. RAFN . Copenhagen
Dr. VON SCHLIEBEN . Dresden
Capt. Don Eduardo CARRASCO Lima

1840.

M. Gerold MEYEN VON KNONAU Zürich
Prof. K. E. VON BAER St. Petersburg
Viscount DE SANTAREM . Paris



Portion of a ... Drawn by A.H. Layard.



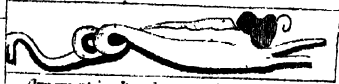
Pilaster in Southern Great H... Al Hat'hr



Bulls in very high relief Northern Great Hall



Specimen of the sculptures decorating the Arches of the lower Halls



Ornament in alto relievo outside centre large Hall. Al Hadhr.





...aining Heads on Pilasters in centre great Hall. ...ds are not so well executed as those in the ...great Hall.





PAPERS READ

BEFORE THE

ROYAL GEOGRAPHICAL SOCIETY.

I.—*Notes of an Excursion to Kal'ah Sherkát, the U'r of the Persians, and to the Ruins of Al Hadhr, the Hutra of the Chaldees, and Hatra of the Romans.* By William Ainsworth, Esq.

The Royal Geographical Society has already published in its Journal an excellent account of the ruined cities which form the subject of the present memoir. But so many are the questions of site, structure, and historical revolution connected with those ruins, that descriptions given of them by a traveller beset with such difficulties as Mr. Ross (the author of the account alluded to) had to encounter from the hostility or mistrust of the Arabs, cannot be expected to satisfy curiosity, however fitted they may be to awaken it in the first instance.

The accidental arrival of two English travellers, Messrs. Mitford and Layard, at Mósul, enabled us to make up a strong party to visit the sites in question; and the results thus obtained by a more prolonged and careful examination, added to certain inquiries into the comparative geography of these sites, will, it is hoped, prove interesting to the Society.

The party consisted of the above-mentioned gentlemen, Mr. Rassám and myself; and we were accompanied by an Arab of Tunis, of whose courage we had had proof in crossing Northern Mesopotamia, when he was in the service of Mohammed 'Alí; but being worsted in an engagement between the Shammár Arabs (the men "without bondage") and the 'Anáïdí, or irregular troops of Ibráhím Páshá, which had recently taken place near Rás al 'Aïn, he had abandoned his horse to save his life, and sought refuge at Mósul. We had also with us a khavάss from Mohammed Páshá of Mósul.

We started on Saturday, April 18th, travelling at first across the cultivated alluvial plain S. of Mósul, named the Karákójah. At this season of the year barley was in ear, and beans in flower; fig, almond, and mulberry trees were in full bloom, but the pis-

tachio as yet only budding. On the sandy deposits of the river the water-melon had put forth its cotyledons. Doves and quails had returned a few days before from their migrations. As the river was high we were obliged to turn up the rocky uplands W. of the ruinous building designated as El Kaṣr in Lieutenant Lynch's map, but better known at Móṣul as El Seramúm, an old country residence of its Páshás. The cliffs which advance at this point over the Tigris, form the south-eastern termination of a low range of hills which stretch to the N.W., and are known as the Jubaïlah, or "hilly range." They are composed of gypsum and lacustrine and marine limestones, and are from 6 to 9 miles in width. On the banks of the Tigris there is a deposit of sulphur in the gypsum of this range.

The rocky acclivities and stony valleys of the Jubaïlah were now clad with a beautiful vegetation. Grass was abundant, and the green sward was chequered with red ranunculuses and composite plants of a golden-yellow hue, which enliven at this season of the year by their contrast the banks of the Tigris and the Euphrates, wherever they are stony. Crossing the Jubaïlah, and leaving the village of Abú Jawárí, "the father of female slaves" (the El Bujiyari of Lynch's map), to our left, we descended upon another alluvial plain, such as, on the Tigris and Euphrates, whether cultivated or covered with jungle, is equally designated Ḥáwí. The present one was cultivated, and contained the villages of 'Oreïj (diminutive of A'raj, lame) and Kabru-l 'Abíd, "the slave's tomb." They are both inhabited by Arabs, now pasturing their flocks on the Jubaïlah hills.

At the end of this plain the ground rises, and at this point are the baths and village of Ḥammám 'Alí; the latter inhabited by a few Chaldees, settled here by the Páshá of Móṣul to cultivate the land. The thermal spring is covered by a building, only commodious for a half savage people, yet the place is much frequented by persons of the better classes, both from Baghdád and Móṣul. The spring appears to have changed its place of exit, as a ruinous building, beneath which once issued the spring, is now 150 yards distant from it. The waters are abundant, evolving hydro-sulphurous acid, and giving off much bitumen. Their taste was vapid. The thermometer indicated a temperature of 84·6 Fahr. The spring issues from a coarse granular gypsum.

Near Ḥammám 'Alí is a mound about 60 feet high, called Tellu-l Sábiḳ, or "the mound of the victor," from a tradition of an engagement having taken place in this neighbourhood. From this Tell a range of low mounds extends about 300 yards to the S.W., where it joins another line, consisting of two rows of low mounds with an intervening fosse, and which extends in a N.W. direction as far as to the Ḥáwí. It would appear that these lines of

circumvallation encompassed a village or site of more importance than the present assemblage of poor huts.* From Tellu-l Sábiḳ the high menárah of Móṣul (Al Tewílah) bore N. 23 W.; Seraimún, N. 31 W.; monastery of Deïr Sheikh Matté, on the Jebel Maḳlúb, N. 32 E.; Pyramid of Nimrúd, S. 34 E.: Kesháf, beyond the Great Zab, S. 17 E.

Sunday, April 19*th*.—Leaving Ḥammám 'Alí, we crossed an extensive Ḥáwí, near the centre of which is the village of Safatus, inhabited by the Arab tribe of Juḥaïsh, or "of the ass's colt," whence its name, Jeyush in Lynch's map. We then turned off to the right to the ruined village of Jeheïnah or Jehennem, "Hell or the Lower Regions," which name excited our expectations, but we only found some old houses of a better class situate upon the side of the hills which flank the Ḥáwí to the W. Tellu-l Sábiḳ bore N. 10 E. 2 miles. Our road continued for 3 hours over verdant prairies, on an upland of gypsum, with some tracts of sandstone, when we arrived at Wádí-l Kaṣab, or Reed-Valley, the banks of a sluggish stream being covered with that plant. We roused an old sow from this cover, and captured a young pig which it was obliged to leave behind. As the animal went grunting down the valley it stirred up several others with their young ones, which we hunted down, catching two more, one of which we liberated, as two were quite enough for our wants.

Leaving Wádí-l Kaṣab, we approached the Tigris, a few miles below the tomb of Sultán 'Abdullah, which was the extreme point reached by the Euphrates steamer in 1839, and passing an abundant rivulet of waters which filled the air with the odour of hydro-sulphurous acid, we came to a level, naked spot, inclosed by rocks of gypsum, on the floor of which were innumerable springs of asphalt or bitumen oozing out of the soil in little circular fountains, from 6 to 9 inches in diameter, but often buried beneath or surrounded by a deep crust of indurated bitumen. These fountains cover a space of land nearly 100 yards in width, and 500 long. To the W. are some low hills, named Al Kayyárah, or the Pitch-place (whence bitumen is derived), the Tel Ghayara of Lynch's map. These heights are continued inland in a north-westerly direction, separating Wádí-l Kaṣab from the plains to the S., and rising to a height of about 500 or 600 feet, to form a cliff bounded by two cones, and called Tell al Nujm, or Star-Mound. A little beyond these pits we found other springs, giving off an equal quantity of bitumen. These are the only cases I know of springs of pure asphalt in Western Asia. The celebrated springs at Hít, and those of Dalakí in Persia give off

* This place may possibly coincide with the Tisalphata of Ammianus, which name may be some corruption for a place of asphalt, just as Hit has been called Is, Izzanopolis and Eiopolis.

bitumen as a swimming product as at Hammám 'Alí. The fountains of asphalt on the Tigris are situate near the southern extreme of the gypsum formation, where it is succeeded by red sandstones; and their geological relations, notwithstanding the upraising of the Hamrín upon a similar axis to the S., are the same as those of the fountains on the Euphrates and in Persia, or nearly at the limits of a series of rock-formations, which become more and more modern from the Taurus to the alluvial plains, which latter extend farther to the N., up the valley of the Tigris, than up that of the Euphrates; whence the diagonal position of the Median wall which bounds the two formations.

Evening was coming on apace. Herds of wild boars were feeding on the Háwí, and an occasional wolf stole along the hill-side, as we approached a thick jungle with the view to encamp there; but we found the banks of the river too high to water the horses. After travelling 4 or 5 miles in search of a good station, we were obliged by darkness to bring up at the foot of a tell (or mound) on the right bank of the Tigris, and below the tomb of Hájjí 'Alí, from which it bore S. 30 W.

Monday, April 20th.—Starting over a low range of hills of red sandstone we entered upon an extensive Háwí, over which we travelled 2 hours to a red cliff, bearing S. 35 W. The banks of the Tigris were well wooded and picturesque; extensive tracts of meadow-land were bounded by green hills, and terminated in islands of several miles in length, covered with trees and brush-wood, amid which winded the rapid Tigris, in a broad and noble expanse, visible as far as the eye could reach. The quantity of large wood near it is greater than on the Euphrates, and the resources for steam navigation are very great.

Passing the cliffs of red sandstone, from which point to the Hamrín the Tigris follows a more easterly course, we came to a valley with a brackish rivulet, coming from the Wádí-l A'hmer. Steep cliffs advanced beyond this to the banks of the river, and obliged us to turn inwards upon the uplands, from which we first gained a view of Kal'ah Sherkát, situate in the midst of a most beautiful meadow, well wooded, watered by a small tributary to the Tigris, washed by the noble river itself, and backed by the rocky range of the Jebel Khánúkah, now covered with broad and deep shadows. In 3 hours' time we arrived at the foot of this extensive and lofty mound, where we took up our station on the northern side, immediately below the central ruin, and on the banks of a ditch formed by the recoil of the Tigris.

Although familiar with the great Babylonian and Chaldean mounds of Bírs Nimrúd, Mujallibah and Orchoe, the appearance of the mass of construction now before us filled me with wonder. On the plain of Babylonia to build a hill has a mean-

ing; but there was a strange adherence to an antique custom, in thus piling brick upon brick, without regard to the cost and value of labour, where hills innumerable and equally good and elevated sites were easily to be found. Although in places reposing upon solid rock (red and brown sandstones), still almost the entire depth of the mound, which was in parts upwards of 60 feet high, and at this side 909 yards in extent, was built up of sun-burnt bricks, like the 'Aker Kúf and the Mujallibah, only without intervening layers of reeds. On the sides of these lofty artificial cliffs numerous hawks and crows nestled in security, while at their base was a deep sloping declivity of crumbled materials. On this northern face, which is the most perfect as well as the highest, there occurs at one point the remains of a wall built with large square-cut stones, levelled and fitted to one another with the utmost nicety, and bevelled upon the faces, as in many Saracenic structures; the top stones were also cut away as in steps. Mr. Ross deemed this to be part of the still remaining perfect front, which was also the opinion of some of the travellers now present; but so great is the difference between the style of an Assyrian mound of burnt bricks and this partial facing of hewn stone that it is difficult to conceive that it belonged to the same period, and if carried along the whole front of the mound, some remains of it would be found in the detritus at the base of the cliff, which was not the case. At the same time its position gave to it more the appearance of a facing, whether contemporary with the mound or subsequent to it I shall not attempt to decide, than of a castle, if any castle or other edifice was ever erected here by the Mohammedans, whose style it so greatly resembles. On the same side we visited the subterranean passage noticed by Mr. Ross; and Mr. Mitford found there the head of a small urn.

Our researches were first directed towards the mound itself. We found its form to be that of an irregular triangle, measuring from the S. to the N. E. point, along the side which is washed by the river, 1727 yards; along the N. side, extending from N. 72 E. to S. 72 W., 909 yards. The mound then strikes off in a nearly straight line 400 yards to the S. 38 W.; afterwards curving round to the S. point, a distance of 1750 yards, making a total circumference of 4685 yards; whereas the Mujallibah, the supposed tower of Babel, is only 737 yards in circumference; the great mound of Borsippa, known as the Bírs Nimrúd, 762 yards; the Kasr, or terraced palace of Nebuchadnezzar, 2100 yards; and the mound called Kóyunjúk, at Nineveh, 2563 yards. But it is to be remarked of this Assyrian ruin on the Tigris, that it is not entirely a raised mound of sun-burnt bricks; on the contrary, several sections of its central portions displayed the ordinary pebbly deposit of the river, a common

alluvium; and where swept by the Tigris, the mound appeared to be chiefly a mass of rubble and ruins, in which bricks, pottery and fragments of sepulchral urns lay embedded in humus, or alternated with blocks of gypsum; finally, at the southern extremity, the mound sinks down nearly to the level of the plain. The side facing the river displayed to us some curious structures, which, not being noticed by Mr. Ross, have been probably laid bare by floods subsequent to his visit. They consisted of four round towers, built of burnt bricks, which were 9 inches deep, and 13 inches in width outwards, but only 10 inches inwards, so as to adapt them for being built in a circle. These towers were 4 feet 10 inches in diameter, well built, and as fresh looking as if of yesterday. Their use is altogether a matter of conjecture: they were not strong enough to have formed buttresses against the river; nor were they connected by a wall. The general opinion appeared to be in favour of hydraulic purposes, either as wells or pumps, communicating with the Tigris.

The south-western rampart displays occasionally the remains of a wall constructed of hewn blocks of gypsum, and it is every where bounded by a ditch which, like the rampart, encircles the whole ruins, so that we did not feel justified in separating, as Mr. Ross has done, the southern portion of the town from the more elevated part.

All over this great surface we found traces of foundations of stone edifices, with abundance of bricks and pottery, as observed before us, and to which we may add, bricks vitrified with bitumen, as are found at Raḥábah, Babylon, and other ruins of the same epoch; bricks with impressions of straws, &c., sun-dried, burnt, and vitrified; and painted pottery with colours still very perfect; but after 2 hours' unsuccessful search by Messrs. Mitford, Layard and myself, Mr. Rassám was the first to pick up a brick close to our station, on which were well-defined and indubitable arrow-headed characters.

"The little mound which crowns the greater one is crumbling to pieces. We found it to be 218 yards round the base, 314 yards round the wall of gypsum, which in part incloses it, and about 40 feet in height. This mound is situate near the centre of the northern side, and is separated by a water-worn ravine from another pile of ruins upon which are some Arab graves. Further than these few facts, neither our researches nor those of Mr. Ross furnish anything remarkable."

By the character of its remains as well as by position, the ruin of Kal'ah Sherḳát is associated with the Assyrian cities of Nineveh, and of Nimrúd or Resen, the Larissa of Xenophon, at the junction of the Tigris and the Great Zab. "Ammianus Marcellinus is the only authority who notices in the same neighbourhood

U'r, a site, as its name would indicate, of great antiquity, and which has by Rennell and others been identified with Al Hadhr; but Ammianus, who calls it a castle of the Persians, describes it as at some distance from that place. Cellarius (Notitia Orbis Antiqui, tom. ii., p. 737), speaking of Ammianus, says: "Addit superiori Mesopotamiæ castellum Ur, inter Tigrim et Nisibin positum quod nonnulli Ur Chaldæorum credunt esse." Afterwards the same author continues: "*Deinde* Hatram, vetus oppidum, in media positum solitudine, itidem inter *superiorem* Tigrim et Nisibin." Hatra is here brought in after Ur by a severe critic, and it is placed between Nisíbín and the *Upper* Tigris, while no such distinction is established for U'r. There is also another passage in Cellarius (p. 729), where, quoting Ammianus, he says: "Quum centesimo circiter lapide a Corduena provincia et Armeniæ finibus Tigrim trajecissit et sex diebus per solitudinem in quâ Hatra sita erat, iter fecisset, ad Ur nomine Persicum castellum venisse." This rather implies a journey of 6 days from the time the army passed the Tigris, travelling along the banks of the river, which they must have adhered to for water, and through the deserts in which Hatra was situated, than through Hatra itself. Ammianus himself says: "Properantes itineribus magius *prope* Hatram venimus." Near Hatra, and not at it—a view of the subject which is supported by his going from U'r to Tisalphata, and thence to Nisíbín, if Tisalphata was on the Tigris, as there appears every reason to believe.

The position of the U'r of the Persians considered as the same as the U'r of the Chaldeans, with regard to Harrán, answers as well to the descriptions of the journeyings of Abraham given by the inspired writers and profane historians as the modern 'Urfah, if not indeed better. "And they went forth from Ur of the Chaldees to go into Haran and dwelt there," would scarcely have been said if Abraham and his family had only removed a few hours from 'Urfah to Harrán. The learned Spanheim, in his History of Job, describes Harrán as upon the road from U'r of the Chaldeans into Palestine, going from E. to W.; and yet identifies the U'r of the Chaldeans in the time of Abraham with the U'r of the Chaldeans of the Chaldæo-Babylonian dynasty, the Urchoe or Orchoe of Ptolemy and Pliny. Bochart and others, according to Cellarius, have sought to identify the country of Abraham with the Ur of the Persians, but they have supposed it to be beyond Hatra, which is decidedly not the deduction to be made from the words of Ammianus. In any attempt to identify the U'r of the Persians, now called Kal'ah Sherkát, with the U'r of the Chaldeans, there is only, till farther evidence can be obtained, the character of the remains, and the narrative of the historian of Jovian's retreat, to be placed in opposition to the

testimony of certain Oriental historians (see my "Researches in Assyria," &c., p. 153) in favour of the identity of U'r of the Chaldeans with 'Urfah, and the existing traditions which have consecrated that city as the birth-place of the father of Isaac.

The sentiment by which animals that are very low in the scale of organization are attracted by light and heat is a simple physiological phenomenon, their nervous system, as in the medusa, being influenced directly by external agents; but it is more curious in creatures in which there exists a ganglionic cerebral system. This evening a young snake found his way into the fire, although we were sitting round it; and at Al Hadhr the same thing occurred with regard to a scorpion, while hundreds of coleopterous insects kept wandering round the verge of the ashes. After dark the frogs of the háwí mingled their croaking with the whoop of night birds and the howl of jackals, while thirsty musquitoes hummed in our ears; but putting out the fire in order to distinguish the horses better during the night, we disregarded the melody around and about us, and slept in security in our cloaks till the earliest dawn.

Tuesday, April 21st.—Our khaváss this morning, seeing that we were about to penetrate the wilderness without a guide, took the pretence of his horse having lost a shoe to withdraw himself from the party, and to return by the river banks to Mósul. On leaving Kal'ah Sherkát we kept a little to the S. of Wádí el Meheïh, in which there was now no running water, in order to avoid retracing our steps to the S., as Mr. Ross had done. We travelled at a quick pace over a continuous prairie of grasses and flowering plants, and crossing the 'Aïn el Tha'leb, having still a little stagnant water, we arrived at a ridge of rocks which rose above the surrounding country, and were constituted of coarse marine limestones. From a mound, upon which were a few graves, we obtained a comprehensive view of that part of Mesopotamia which extended to the W., but without being able to distinguish the valley of the Tharthar or the ruins of Al Hadhr. The country near us undulated much, and to the S.W. the Hamrín hills terminated in a long but not very elevated range, upon which was a cone called El Katr, which forms the westerly termination of the Hamrín; and as we afterwards found, advanced over the valley of the Tharthar. Mr. Ross has noticed this fact also; and it is of importance, as Mr. J. Arrowsmith and other geographers have traced across Mesopotamia a continuation of the Hamrín hills as far as this 'Abd al 'Azíz. The Hamrín are formed of tertiary red sandstones, gypsum, and conglomerates; and the 'Abd al 'Azíz, as far as I am yet acquainted with them, of chalk and superincumbent limestones.

Opinions as to the probable position of Al Hadhr were in

favour of some mounds which were visible in the extreme distance to the S. 95° W., and having great faith in the eyes of our Bedwín, who also took this view of the subject, we started in that direction, although the compass indicated a more northerly course. After 2¼ hours' quick travelling, still over prairies and undulating country, we came to the supposed ruins, which turned out to be bare hills of sandstone, the southern termination of a low ridge. Although pestered by sand-flies, we stopped a few moments and breakfasted on bread and wild leeks (Allium roseum), which are abundant every where, and frequently enamel with their roseate and clustered umbels the lichen-clad space that intervened between the dark-green bushes of wormwood. From this point the tell with graves bore N. 75° E., and El Ḳatr S. 50° W.

Changing our route, we started to the N. 25° W., in which direction we arrived, after 1¼ hour's ride, at a valley bounded in places by rock terraces of gypsum, which indicated a wádí and a winter torrent, or actual water. To our joy we found the Tharthar flowing along the bottom of this vale, but only from 15 to 20 feet in width instead of the 50 we had been led to expect; and to our great comfort the waters were very potable. The stream though narrow was deep, generally from 5 to 7 feet, and hence with difficulty fordable; on its banks were a few reeds and scattered bushes of tamarisc. We proceeded up the stream in a direction N. 10° W. in search of a ford, which we found after 1 hour's slow and irregular journey, and we lost ½ an hour refreshing ourselves with a bath. We afterwards followed the right bank of the stream, being unwilling, as evening was coming on, to separate ourselves, unless we actually saw Al Ḥadhr, from the water so necessary for ourselves and horses. The river soon came from a more westerly direction, flowing through a valley every where clad with a luxuriant vegetation of grasses, sometimes nearly ½ a mile in width, at others only 300 or 400 yards, and again still more narrowed occasionally by terraces of gypsum. This rock was very cavernous, and furnished from its recesses many subterranean springs. At one place we observed a part of the waters of the Tharthar absorbed by a fissure in the rock. The gypsum is also observed at some points to rest upon red sandstones, which here present chloritous beds. We stopped 1 hour before sunset in order to have time to collect wood before dark, and dined upon rock partridges (perdix petrosa) killed at Ḳal'ah Sherḳát.

Wednesday, April 22nd.—Rain overtook us in our sleep, which was otherwise unbroken even by dreams of Arabs, still less by their presence; indeed we had been hitherto as quiet as if travelling on the downs of Sussex. After holding a short consultation over Mr. Ross's memoir, we deemed it best to keep on

up the river, but to travel a little inwards on the heights. This plan was attended with perfect success; and we had ridden only 1½ hour, when we perceived through the misty rain mounds still to the N.W., which we felt convinced were the sought-for ruins. Mr. Rassám and myself hurried on, but soon afterwards, perceiving a flock of sheep in the distance, we became aware of the presence of Arabs, who could be no other than the Shammár, so we waited for our friends and rode all together into the kind of hollow in which Al Hadhr is situated. Here we perceived the tents of the Bedwíns extending far and wide within the ruins and without the walls to the S.W. The ruins themselves presented a magnificent appearance, and the distance at which the tall bastions appeared to rise, as if by enchantment, out of the wilderness, excited our surprise. Comparing the feelings expressed by Mr. Ross, on first seeing these ruins, with the drawings engraved by the Society, we had before smiled involuntarily, but we now entered fully into that gentleman's sentiments and were filled with a similar sense of wonder and admiration; no doubt in great part due not only to the splendour of the ruins, but also to the strange place where the traveller meets with them —"in mediâ solitudine," as Ammianus so briefly but so correctly expresses it.

Inquiring of a shepherd for the tent of the sheïkh, which we soon afterwards distinguished by its two spears, we rode directly up to it, and in a few minutes found ourselves seated by a spare camel-dung-fire, and surrounded by members of the Lamúd branch of the Shammár Arabs. Happily for us there was at this moment in the encampment an Arab of Mósul who recognised Mr. Rassám, and the reception given to us was at once hospitable and tolerably frank. The finding Arabs here is indeed what may generally be relied upon by any traveller in search of these ruins. The number of halting-places which present what is actually necessary for the Arab, water and grass, are not so numerous in the plains of Mesopotamia and Arabia as are generally imagined. Hence the reason of their changing localities; and hence the traveller may almost be as sure of meeting Arabs at Palmyra as at Al Hadhr. For the same reason that cities were built on these oases in the wilderness, the wandering Arab now resorts to situations where there are waters, and with them pasturage. To M. de Lamartine's work on the East, there is appended a very valuable memoir, purporting to be an account of the residence of Fat-h-allah Seghír amongst the wandering Arabs of the great desert. There are a number of facts which convince me of the authenticity of this document, but I shall content myself with noticing what refers to Al Hadhr. Leaving Nain el Raz, evidently meant for Rás al 'Aïn, the party which

the narrator accompanied pitched their tents on the banks of the Khábúr, from whence they proceeded to the mountains of Sangiar (Sinjár): they then drew towards what the writer designates a river, or rather arm of the Euphrates, which joins the Tigris. This is evidently an error founded upon the mysterious origin of the Tharthar. He then describes the enormous trays used by the Bedwíns of Mesopotamia, and of which a specimen was measured by Mr. Ross. The Arabs proceeded from the Tharthar to the territory of Atterié, near the ruins of the castle of Attera (Ḥadhr), where they encamped for eight days, the pasturage being very abundant. The course here followed by the Arabs is in every respect the same as that pursued every year by the Shammár, in their migrations to and from their winter quarters on the plains of Seleucia to their summer quarters on the Khábúr and in the Sinjár.

At the present moment, Sufúk, the chief of all the Shammár, was, with a large body of horsemen, at Rás al 'Aïn, from which he had driven the 'Anáïdí of Ibráhím Páshá, while the main body of the tribes remained part on the Khábúr and part near the Sinjár, where they were also at enmity with the Yezídís. Having breakfasted upon newly made bread and fresh butter, the latter a luxury not to be obtained at Móṣul, we made our first visit to the ruins, during which some of the Arabs gave us much annoyance by their rudely anxious and almost imperious inquiries as to the exact spot where the money was, which, as in our predecessor's case, they felt quite certain we had come to seek for. At length, having returned to the tent, Mr. Rassám addressed them upon the folly of the ideas which they entertained regarding finding treasures, and endeavoured to explain the real object of our researches, in which he was backed by the sheïkh and the merchant, and we were left the remainder of the day among the ruins pretty well to ourselves—a circumstance which, however, was also in great part owing to a rumour which got abroad that an army was following in our steps, and in consequence of which the tribe judged it convenient to take their immediate departure without sound of drum or trumpet; and, three hours after our arrival, there were only the tent of the sheïkh and a small one near it remaining of the whole encampment.

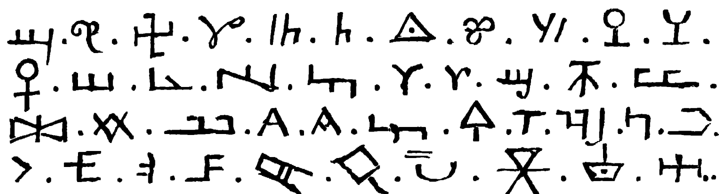
The ruins of Al Ḥadhr present the remains of a principal building which apparently was at once a palace and a temple, and which surpasses in extent and in the perfection of its style the ruin known as the Ṭáḳi Kesra, or Arch of Chosroes at Ctesiphon, and which was the residence of the kings of Persia of the Arsacidan dynasty. It consisted of a series of vaulted chambers or halls, of different sizes, all opening to the east, or towards the rising sun and planets, and regularly succeeding one another from north to south,

and was divided into two parts by a wall; while in front was another row of edifices, guard-houses, &c., at the southern end of which was a great hall, with ornamented vault and tall columns, similar to what is observed in the chief edifice. The whole of these buildings were enclosed within a wall about 1360 yards square, which left a considerable space open in front, and this open square was in the exact centre of the town, which, as figured in Mr. Ross's map, is nearly a perfect circle, surrounded by a rampart, about 3 miles 180 yards in circumference. Portions of the curtain, which was 10 feet 3 inches in width, still remain on this rampart; and there are also the ruins of 32 bastions, placed at unequal intervals, and not, as Mr. Ross supposed, every 60 paces. The space occupied by the town still contains the ruins of tombs and other edifices, and is everywhere covered by mounds of ruined buildings. There is also a spring, and a channel for water, not straight but tortuous, which crosses the town: and there were apparently four gates, having straight and paved roads leading from them to the central edifice.

The whole of the buildings are constructed of a coarse granular limestone, abounding with marine shells, more especially *ostracites* and *anomiæ*, apparently, for the most part, recent species. There is a tradition preserved at Mósul, that the stones for the construction of Al Hadhr were brought from Sinjár, where I hope on a future occasion to seek for this formation. The stones have been hewn with skill, and are well adjusted.

Every stone, not only in the chief building but in the walls and bastions, and other public monuments, when not defaced by time, is marked with a character, which is, for the most part, either a Chaldaic letter or numeral. But some of them could not be deciphered either by Mr. Rassám or by a Jewish Rabbi of Jerusalem, whom we consulted at Mósul; for it is necessary to remark that the Chaldeans, or Chaldees, since their conversion to Christianity, have uniformly adopted the Syriac letters which were used by the apostles and fathers of the church, regarding the pagan writing (or Tergúm, as they call it) as an abomination. The Jews, however, who learnt it in their captivity, have retained, except in their Talmud, and some other works written in the Hebrew character, the use of Chaldean letters. Some of the letters at Al Hadhr resembled the Roman A, and others were apparently astronomical signs, among which were very common the ancient mirror and handle ♀, emblematic of Venus, the Mylitta of the Assyrians, and Alitta of the Arabians, according to Herodotus; and the Nání (Hyde, p. 92), or Nannaia (Rawlinson, Journal of R. G. S., ix. p. 43), of the Syrians. Mr. Ross makes a mistake, which it is important to correct, when he says that these letters are only seen in the midst of broken walls where they

could not have been exposed when the structure was perfect. It is quite evident, from the prominent situation which they occupy in the interior of the great halls and sanctuaries, that their object was much more important than a mere arrangement of the stones. The characters alone indicate their antiquity; and, as to their use, they appear to have a distant relation to practices carried to a further extent by the Assyrians and Babylonians, and by the Egyptians. In whatever obscurity the meaning of these signs or letters may be now involved, they still possess great interest to the archæologist, as proving the Chaldean origin of the buildings in question.*



In the details of the various architecture presenting itself to the inquirer at Al Ḥadhr there is much which claims a brief notice. Mr. Ross has described the compartments of the chief building, numbering them from S. to N., and we will follow the same plan in the few remarks there remain to be made in addition to what that gentleman has observed.

The most southerly hall is No. 1, which is a small hall, 9 yards deep by 6 in width: it has externally every stone in the arch sculptured, in high relief, with a human bust, some of which, as Mr. Ross remarks, have very singular curling bag-wigs, or, more probably, a peculiar mode of dressing hair, which we know to be common in Persian sculptures, but those, I believe, only of a modern date, or more particularly of the time of the Sasanian dynasty. Mr. Layard, however, stated that he had seen head-dresses of a similar character at Ba'lbek, and which were Roman. They were probably connected with a form of worship introduced from Persia into Emesa and Heliopolis, and from thence carried, by the pretended son of Caracalla (Heliogabalus), to Rome.

The second hall is of greater dimensions, being 31 yards long by 14 wide, and 20 yards high. The figures on the arch were those of angels, or females apparently in the air, with feet crossed and robes flying loose; while in the interior, on both sides of the hall, were three square pilasters, surmounted by full round faces, 2 feet 2 inches high, by 1 foot 8 or 10 inches broad, in high relief, and executed with considerable fidelity and spirit. Mr.

* The letters were generally about one or two inches in size, and carefully sculptured, one in the centre of the face of each stone.

Layard has enabled me to forward to the Society, drawings of the most remarkable faces remaining in this and the other halls.

While the style of these sculptures appears to be pretty nearly uniform, it is impossible not to recognise costumes differing much from one another. Indeed, it requires but little imagination to figure to oneself in these sculptures the representations of the successive powers who ruled the City of the Desert. The simple turban-like head-dress represents the Chaldean; the bearded physiognomy and scattered hair, the Persian satrap; the laurel-leaved band, supporting eagle's wings, the Roman; while the binding round the head, like a double fold of rope, as it is also described by Mr. Ross, appears the original of the present Arab head-dress. It may be advanced against this view of the subject, that if the building is all of one style, this style must also be carried through all its details, and that we cannot expect that any of the decorations can be illustrative of different periods; but there is no reason why, if the Parthians or Persians borrowed their style from the Romans, they still might not have introduced their own sculpture, as at Persepolis: or, if the Romans built the great monument of Al Hadhr, they might equally have been influenced by a conquered people to introduce, as well as letters, forms sacred to their religion, or gratifying to their pride and to their national reminiscences.

On the face of the wall of this great compartment, besides the signs before mentioned, are two inscriptions, one in Chaldaic, the other in Arabic, both cut in the stones, but which run along from one to another, and are evidently more modern than the building. The first, translated by a Jewish Rabbi, appears to be the lament of some Jews of the captivity; for ancient Chaldeans would scarcely use the language of David: "In justice to thee who art our salvation, I hope from thee, O God, for help against mine enemies." The general opinion among the Jews is in favour of this inscription having been written during the captivity. The Rabbis cannot decipher the signs of older date; some are Chaldean numerals, others they consider to be astronomical signs, not a few appear to be Parthian or Armenian. The Arabic inscription was copied and translated by Mr. Rassám; its purport is as follows:—"Mes'úd Ibn Maúdúd Ibn Tamankí, the just king, protector of religion, and defender of the faith, in humble service, and seeking mercy from his Lord, caused this to be repaired in the year of the Hijrah 586" (A.D. 1190). It is remarkable that the name inscribed here* is the same as that we met with at Sultán Khán, in Kój-hisár, and is that of a king whom I have described in a former memoir as having established a great road

* 'Azzu-d-dín, Mes'úd ibn Maúdúd, Atábek of Irák, who reigned at Mósul from A.H. 576 to 589 (A.D. 1180—1193).—Ed.

from Baghdád through Asia Minor. It here apparently followed the same line as that used by the Greeks and Romans—Seleucia, Sitace, Ur, Hatra, Tisalphata, Nisibis; in the time of the Khalifs, Baghdád, Sherí'at el Beïdhá (Sitace), Akbará on the Babilín (Opis*), Samarrah, Tekrít, Kal'ah Sherkát, Al Hadhr. It is remarkable that Ptolemy, in enumerating the sites upon the Tigris, after noticing Derbeta (Diyár-bekr), Saphe (Hisn Keïfá), and Deba (Bezábdeh Jezíreh), starts off by Sinjár to Batnæ (Betuna) and Birtha (Bír), which has misled even Cellarius.

With the assistance of lights we examined the subterranean rooms connected with the first great hall, but did not find anything of interest.

In the rear of the same great hall is another compartment, surrounded by a lofty vaulted passage, 96 yards round. From its beautifully ornamented doorway, and complete seclusion from the other parts of the edifice, it may be conjectured to have been a religious sanctuary. Over the doorway is the most beautifully sculptured relief in the whole building; it represents griffons supporting heads, human and others, and in the centre is the head of Apollo, or Mithra, supported by eagles with scrolls in their mouths; beneath is some beautifully sculptured foliage. Mr. Layard has furnished a drawing of a portion of this frieze. It is evidently of Roman execution. M. Texier, who passed through Mósul shortly after our return, gave his opinion also to that effect. It would appear as if the Romans had contributed to adorn a temple consecrated to the worship of a deity in whom they recognised their own Apollo, adding the Roman eagles to the insignia of Mithra, who was the same as the Bel of the Chaldeans.

At the first small hall of the northern division (No. 4), the sculptures over the arch of the entrance are among the most perfect of the out-of-door sculptures. They appear to be alternations of male and female heads, the first having the peculiar headdress noticed in No. 1, while the latter present a remarkable similarity to the present style of dress in Western Europe. Some of the ladies have dresses like corsets, terminating in a point. The bust is neatly and only partially displayed. Most of them wear tiaras of jewels, some have necklaces. The hair falls on the shoulders of some in a profusion of ringlets, in others is trimmed up in large curls, and again in some puffed out behind, as was once the case at the French court. On the wall between Nos. 4 and 5 is the sculpture of a monstrous animal, of which I send a copy by Mr. Layard.

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* If Akbará was, in the time of the Khalifs, as we know from the Oriental geographers, upon the present Old Tigris, how much more likely is it that Opis, which was anterior to Akbará, was there also, than at the present junction of the Physcus and Tigris, where Lieut. Lynch has placed it in his map!

The walls were measured in all their details of bastions, &c., and were found to be 5460 yards round, which, as the space was paced and not measured off, can only be an approximation; but which comes remarkably near to the amount in yards of the Persian farsakh, the Jewish parsah, and the Greek parasang, if (as Major Jervis has done after Jomard and others) we assume that to be an integral portion of the earth's meridional circumference, or the eight-thousandth part, which computed to the ellipticity $\frac{1}{305}$, will be equal to 5468·668 yards English. The exactness of the forms observed in the construction of Al Ḥaḍhr—a square within a circle and in its exact centre—certainly point out that a system was observed in its construction; and it is a striking corroboration of the facts observed of the circumference, that the sides of the inner square are 340 or 341 yards in length, or the $\frac{1}{16}$th of the circumference of which the whole square is at or near $\frac{1}{4}$th. Had all the admeasurements been taken with care, probably a similar system would have been found to pervade the whole of the details.*

Within the circuit of the walls were many ruins of doubtful character. It could only be the result of a very hasty examination which would confine the dwelling-houses merely to the western part of the city, and assign to the eastern a continuous necropolis. Some of these buildings are square, and they are of different sizes. I transmit a sketch of one ornamented with pillars, which had two interior vaulted chambers with an outer vaulted hall, and a stair leading to the top as if to sleep upon it, as is the custom at Móṣul and Baghdád. The openings to let in light are more like loopholes than windows, but this may have been for coolness and from want of glass, as is observed in the cottages of the peasants in the East. A large square building, with one vaulted chamber, which appears to have been a small temple or mausoleum, occurs on the northern side. It is built upon a handsome basement, with a projecting but simple cornice. I ought not to omit to mention that the pear-shaped cavities common in Syria are also met with amid the ruins here.

It only remains for me to make one or two observations upon the history of this remarkable city.

It is evident from the character of the letters or signs inscribed on the hewn stones, that whatever style was adopted as a pattern or for imitation, or whoever were the architects employed in the construction, that the chief persons in the city were Chaldeans or Chaldees.

* In laying down the plan I find I have also two admeasurements taken, one from the S.W. corner of the inner wall to the outer wall, and the other from the N.W. corner to the outer wall; these give, one 625, the other 620 yards, an excess over the probably real distance of 615, which might result from the inequalities of the soil. I have consequently adopted the theoretic distance in the plan as most correct.

Modern historians (Heeren, Manual, &c., vol. i. p. 38) admit the existence of the Chaldeans as a northern nation anterior to the foundation of the Chaldæo-Babylonian dynasty. No monuments of this very ancient people have as yet, however, been discovered, which can be ascertained to belong to a period anterior to the Babylonian conquest; and it appears from the few cities supposed to have belonged to them, and of which remains are extant, as Orchoe and Borsippa, that they constructed huge mounds or lofty temples to their deity Bel, in the same manner as the Babylonians. But some latitude must be allowed to this statement in the north; for although there is every reason to believe that U'rfah was one of the U'rs of the Chaldees, yet no remnants of this kind are there met with, and were it not that we find that custom preserved where there are rocks and stones for building, as at Kal'ah Sherkát, one would have felt inclined to confine it to the country for which it was best suited, and where it sprang partly from necessity. From what is known of the ancient style of the Chaldeans, as well as from the peculiarities observed in the construction of the monuments now to be seen at Al Hadhr, there is every reason for believing that city to be of a comparatively recent date.

The first period when Al Hadhr comes under the notice of history is at the time of the conquest of Trajan, who first reduced Mesopotamia into a Roman province. The fragments of Dion Cassius, preserved by Xiphilinus, notice the people of Al Hadhr as 'Αγαρηνοί, which, as Valesius pointed out, should be 'Ατρηνοί. For Dion, relating the campaign of Severus, writes τὰ 'Α'τρα, and Herodianus (iii. cap. ix.) αἱ 'Α'τραι. Ammianus writes it Hatra, as does also Cellarius. The Peutingerian tables, almost always in error, call it Hatris. Zonaras (p. 216) names it πόλιν Αράβιον, an Arabian city. Stephanus merely says that it is situated between the Euphrates and the Tigris.

Hadrian, it is well known, relinquished the conquests in Mesopotamia shortly after the death of Trajan; but even if Trajan did not embellish the city of Hatra, the connexion established between that place and Nisibis, where there also exist beautiful friezes somewhat similar to those at Al Hadhr, must have had considerable influence upon the taste of the Atrenians.

From the time of the cession of the Mesopotamian provinces, about A.D. 118, to the conquests of Septimius Severus (200), there reigned Chosroes, Arsaces XXVI. (Vologeses II.) and Arsaces XXVII. (Vologeses III.), who no doubt held Al Hadhr in subjection. It was in the time of Arsáces XXVIII. (Ardawán) that Severus made his first and unsuccessful attempt to reduce Hatra; but the second attempt was attended with success in the time of Arsaces XXIX. (Pacorus). The resistance made by

Hatra against the Roman arms is among the most remarkable features in its known history, and affords evidence of the high degree of military skill and great internal resources which were possessed by the Atrenians, as well as of advantages of position. The conquest of Severus does not appear to have been preserved by the Romans, and although some of the monuments seem to have belonged to the time of the Sassanide or Sasanian dynasty of Persian kings, still it would appear that, from causes now involved in obscurity, the City of the Wilderness was abandoned in the early period of that dynasty, for we find that on the retreat of Julian's army under Jovian, they passed by Ur, leaving Hatra to the left as before described, noticing the city as having been deserted before that time, "olimque desertum."

This period of the history of Hatra is succeeded by another interval of impenetrable obscurity. No sculpture nor monuments of any kind indicate the existence of a Christian community within its walls, which is the more remarkable, as Niṣíbín became the seat of a patriarch, and Al Ḥadhr was in the centre of a newly-converted and eminently Christian people; but a single inscription comes to inform us that in the year 1190 (586 of the Hijrah), one of the Khalifs of Baghdád, undeterred by the colossal images, which infringe the laws of Moḥammed, attempted to restore the fallen grandeur of this ancient city. Nor was that inscription merely the expression of capricious vanity; it was an index to a great road, as previously noticed, restored from ancient times. There are, however, no Saracenic monuments at Al Ḥadhr, and the Khalifs appear to have held that place by a brief and unstable tenure.

It only remains to be remarked respecting the name of Al Hadhr, which appears at first to be a corruption of Hatra or Hatre, that it has a very distinct Arabic meaning—the word being particularly used to designate the dwellers in towns or cities, in opposition to the Bedwíns, or roving tribes. This would agree with Zonaras's view of the subject. But it has also a more antique Chaldean meaning, Hutra or Hatra signifying in that language a sceptre, and figuratively the seat of government. Al Ḥadhr and Hatra or Atra may have been equally derived from this source, which some may perhaps consider the more likely, as the city appears to have had a Chaldee origin.

The river Tharthar, which gives life and verdure to the prairies of eastern Mesopotamia, has its origin from sources in the hills of Sinjár. Its waters are brackish, but not unpleasant at some seasons of the year, and it is known to lose itself in the salt lake called Al Milh. The red sandstones of Mesopotamia, W. of Al Ḥadhr, also furnish rock salt. According to some of the Oriental geographers, there was formerly an artificial com-

munication existing between the Khábúr and the Tigris, or this river and the Tigris; but I regret only being able to call attention to the fact, not having the authorities at hand.

Thursday, April 23rd.—We left Al Ḥadhr (6h. 45m. A.M.) in a drizzling rain, which continued more or less all day. The Sheïkh guided us to a ford of the Tharthar, a little above the ruins of an ancient bridge; from whence continuing our route in a direction from N. 30 to 40 E., we struck right across the grassy plains towards Móṣúl. The sharp eye of the Arab distinguished Bedwíns on the extreme verge of the horizon, when almost undiscernible by an unpractised observer. 1½ hour's journey brought us to Wádí-l Aḥmar or Ḥamrá, the Red Valley, where the red sandstones beneath the gypsum are denuded, but we found there stagnant pools of bitter water. At mid-day we stopped to give the horses a feed. At 2h. 30m. we passed by a low range of limestone hills, forming the extreme westerly prolongation of the Tel Nujm. 2 hours from this, always travelling at a rate of about 5 miles an hour, we came to the Wádí-l Ḳasab, the plain around which was covered far and near with the tents of agricultural Arabs, who as a reward for their industry, in a country where the administration is so powerless, have to pay tribute at once to the Sultán and to the Shammár Arabs. These tribes were the Kháyaliyín, "the deceivers;" the Jubur, "the restorers;" and Ḥadídiyín, "(the men) of iron." Passing this plain we entered upon the Jubaïlah hills, in a valley of which, called Al 'Adhbah, or the "fresh waters," we found encamped the Jubaïsh, previously noticed, the Duleïm, and the Na'áïm, "the benevolent,"—agricultural tribes. Night overtook us soon after entering upon the hills; being clouded, we could neither see the compass nor the stars, and soon lost our way, wandering about up rocks and down into valleys till we heard the barking of dogs. While following the direction of these sounds, we stumbled upon a pathway, and keeping to it with a careful tenacity, we reached the brook and ruins of Khidhr Ilyás, from whence the road to Mósul was familiar to me. We arrived at the gates of the town, after a journey of about 60 English miles, a little before midnight, but could not prevail upon the Ḳapújí* to open them, so we were obliged to loiter in our wet clothes under a deserted vault till the break of day. Since our return to Móṣul several of the Shammár Arabs have repaid our visit, upon which occasion we presented them with pieces of calico for shirts and kerchiefs of British manufacture, and have established friendly relations with them, which will much facilitate our further journeyings in Mesopotamia.

The geographical botany of the great tracts which we travelled

* Ḳapújí or Ḳapíjí, *i.e.* door-keeper in Turkish.—Ed.

over on this excursion can be described in a few words, and may therefore find a place in the present report. There are scarcely any spots that are actually deprived of all vegetation. The most naked have a few Lichens, among which are prominent a grey Lecidea with black raised apothecia or fructification; next to this in frequency is a pink-coloured Cetraria; on the extreme verge of these grow a few pseudo-lichens, more particularly Verrucaria maura and V. epigea. Oat grass is by far the most abundant of the gramineous plants. This single species covers whole uplands of miles in extent, to the exclusion of everything except a few flowering plants, which at this season of the year were the Ranunculus Asiaticus, and certain species of Hieracium and Crepis. The beautiful Chrysanthema and Gnaphalia, belonging to the same family, which also, with a few Centaureæ, adorn the wildernesses in summer, had not yet come into bloom. Other grasses were also met with, among which Hordeum pratense and a delicately-panicled Poa advanced upon the most sandy spots.

In the drier parts of the plains, grasses became more rare and lichens more common, but these tracts were clothed with a more prominent vegetation of under-shrubs of wormwood; among which the most common species were Artemisia fragrans and A. absinthium. In these unfavoured spots there were few flowering plants, and they were mostly gathered round the vast ants' nests, or had sprung up where cattle had been pasturing, or the Bedwíns had bivouacked. Among the social plants certain vagabond species were met with here and there, especially where there was a pathway. Such were the gay Aster pulchellus, Allium roseum (everywhere), Papaver dubium, Campanula glomerata, and Gentiana campestris, common everywhere. Romeria hybrida, Mathiola varia, Matricaria chamomilla, and Anthemis nobilis, and two species of Erodium, on the more fertile spots. The family of the Leguminosæ was also represented by the genera Cytisus and Vicia, and that of Caryophylleæ by a few species of Saponaria and Silene.

On passing the Wádí-l Kasab and coming into the country of cultivating tribes, new species, unknown in the wilderness, immediately make their appearance, even on plains in other respects of similar characters; among these especially Trollius Asiaticus and a yellow variety of Ranunculus Asiaticus, but rare, Adonis flava, Ornithogalum umbellatum, Gladiolus segetum, and G. Byzantinus, Iberis saxatilis, Calendula officinalis, Malva rotundifolia, Convolvulus, Althæoides, &c. It is curious to observe how many of the Phanerogamous plants which grow in these countries are British species: of about 40 which I have collected this spring near Mósul upwards of 30 are familiar meadow or wayside plants.

II.—*An Account of a Visit to the Chaldeans, inhabiting Central Kurdistán; and of an Ascent of the Peak of Rowándiz (Túr Sheïkhíwá) in the Summer of* 1840. By William Ainsworth, Esq.

The most characteristic feature of the great mountain-barrier which separates Western from Central Asia is the remarkable parallelism of its ranges, the general direction of which is nearly N.N.W. and S.S.E. This chain, which is prolonged to the S. by only a few comparatively low ranges, constituting what I have elsewhere named the Persian Apennines, assumes the height and character of true Alps or principal mountain masses in the districts of Luristán and Kirmánsháh; but there, as to the S. of Kurdistán Proper, in the districts of Suleïmáníyeh and Ardelán, and to the N. in the districts of Betlís, Se'rt, and Zákhó, the parallel ranges are not so numerous nor extensive as to prevent the tribes of mountaineers from being tributary on the one side to Turkey, and on the other to Persia, or to Turkey solely.

It is, however, between the parallels of 36° and 38° N. lat., or in Kermánj or Kurdistán Proper,* that the same chain appears to attain its greatest extent and elevation; the number of ranges succeeding one another is there great, and it is only within them that two tribes of mountaineers—the Tiyárí and Jellú—belonging to an ancient Christian community, have preserved their independence intact for ages. It is true that certain Kurd tribes or chieftains have frequently thrown off the yoke of the 'Osmánlí on the one side, and of the Persians on the other, and that their wild and lawless habits are strongly opposed to a regular government; but within these few years much has been done towards ameliorating their condition, and towards establishing among them the authority of the Sultán and of a daily improving legislation.

Thus, of the four districts of Kurdistán Proper, Bukhtán is under the government of Zákhó and Jezíreh ibn 'Omár, the latter of which was only subdued in 1834-35 by Reshíd Páshá. The tribes of northern Kurdistán were reduced to obedience by Háfiz Páshá in 1837-38. The Bey of Hakkárí is really under the sway of the Páshá of Ván, the fertile shores of which lake bring

* Major Rawlinson designates Ardelán as Kurdistán, or the country of the Kurds Proper. This may be true in one sense, as the designation is unknown among the natives, who call themselves Kermánj. But the modern application of the name Kurdistán is justified by long usage: that name is given to the same country in the present day by the Persians, Turks, Armenians, Chaldeans, and Arabs of the neighbourhood, and is generally recognised in Western Europe, though with too great a latitude. In the present day, Kerkúk and Arbíl are considered as towns attached to the Páshálik of Baghdád, and the ancient Adiabene forms part of the Páshálik of Mósul. It is not customary, although quite arbitrary, to consider the country of the plains W. of the outlying ranges of hills in either of these Pásháliks as forming part of Kurdistán. Jezíreh Zákhó and Köï Sanják, like 'Amádíyah and Suleïmáníyeh, are in the hills.

industry, civilization, and government into the heart of Northern and Central Kurdistán. The Beg of Rowándiz revolted a few years back, and was enticed away from the mountains, his brother having been appointed in his place; for the steep rocks which form the natural barrier of the Rowándiz country were never climbed by the 'Osmánlí troops. The Beg of 'Amádíyah, who governs Bahdínán, the fourth and last district, has been a recent cause of trouble, and in the spring of 1839 'Alí Páshá of Baghdád came to Mósul in order to reduce that disobedient chief, but no active measures were then taken.*

Mr. Rassám and myself were waiting anxiously at Mósul in the spring of 1840 for two desiderata for penetrating into Central Kurdistán: first, the melting of the snows, which only proceeds so far as to render the great chains passable in the month of June; and, secondly, the arrival of the instruments which we had received notice were on their way from the Royal Geographical Society. Muhammed Páshá of Mósul, who, by the cession of Márdín to the government of Diyár-bekr, had raised his force, in regular and irregular troops, to about 2000 men, was waiting also for the same favourable season to put into execution the campaign projected the preceding year.

The Páshá started on the 28th of May, and soon afterwards

* I regret that in this section, the only one published in "Researches, &c.," in which the altitudes are not founded upon barometrical observations, that I was not aware of Mr. Frazer's observations upon the same chain with the boiling-point thermometer. This has been designated a rude and inaccurate method; but with the improved instruments now made for the purpose, I am inclined to look upon it as much more serviceable than the barometrical one. The instrument appears almost incapable of getting out of order, and is much less easily broken; while I have never yet seen a barometer carried over a chain of mountains, or through a long journey, without losing some of the quicksilver through the pores of the wood. This has happened to me with barometers of various constructions by Newman, Troughton, &c. The late French expedition of MM. Texier, De la Bourdonnaye, &c. in Asia Minor broke *six* barometers. Good tables of corrections for observations made with the boiling-point thermometer are still wanted; but the instrument itself is, if properly constructed, susceptible of the greatest delicacy. The number of observations made with it upon the present journey amount to fifty-seven, of which six only were liable to doubt; whereas in the barometric observations made across Taurus there are several, as at Márdín, 3175 feet by barometer, which I have since found to require correction.

It might be added, as one of the great characteristics of the mountains of Kurdistán and of the Persian Apennines, that they do not constitute, as is usually the case, chains which rise towards the centre and fall towards the sides, but a country of mountains gradually rising towards an upland beyond. But this is also the case with Taurus, where the waters spring from the northern declivities, as at the Gólek Bógház and the pass of Pelverreh; and great rivers, as the Seihún, Jehún, Euphrates, and Tigris, find their way through the chain. In the Kurdistán mountains we find the Great and Less Zab presenting similar phenomena, and the same is the case with regard to the Diyálah in Kirmánsháh and the Kerkhah and Dízful in Luristán. The elevation of the great Persian upland E. of these mountains is, according to Frazer, at Zergún 4500, at Isfahán 4000 (Hamadán is evidently higher); at Tabríz, according to Brown, 4500; and from several observations by myself the lake of Urumíyah 4300 feet. The sources of the Zab, according to Colonel Monteith, are at an elevation of 7500 feet, which will be found to agree with the thermometric level.

intelligence came of the Persians having occupied Suleïmáníyeh. Under these circumstances we resolved to start without further delay, and, avoiding the Turks if possible, by taking a cross road, to reach 'Amádíyah before them, and before the country should be thrown into a disorder which might render it inaccessible for the whole season.

The first object which we proposed to ourselves was to visit Sheïkh 'Adí, so celebrated as the chief seat of I'zedí or Yezídí worship, and whither no European had yet bent his steps. Having ridden a little way out of town on the evening of June 7th, we were enabled next morning (Monday, June 8th) to cross the N. shoulder of Jebel Maḳlúb, the Mons Nicator of the historians of Alexander, and from the contorted limestone of which issue some abundant springs of fine water. On the south-western face of the same mountain are also the ruins of a Christian monastery, called Deïr Sheïkh Mattẹ, the monastery of Sheïkh or Father (Saint) Matthew.

Beyond this a country of low hills of tertiary sandstones led us to the plain of Nav-kúr, or the place of mud (not Nakúr), watered in its centre by the Khazír, or Bumadus, and bounded to the N. by the limestone range of Rabbán Hormuz, at the foot of which is the large Yezídí village of Bágh-Idrí; to the N. E. by the sandstone hills of 'Aïn Siffín; and to the E. by the limestone rocks of Aḳra', through which the river forces its way from the N., apart from the hydrographical basin of Aḳra', which will be afterwards described.

We reached 'Aïn Siffín after a journey across the plain of 4 hours, and entered at this place upon the mountainous country. The plain of Nav-kúr, except when cultivated, is almost entirely overgrown with species of glycyrrhiza and artemisia, and certain social umbelliferous plants. Already at 'Aïn Siffín a slight change in vegetation is perceptible. The common thorn makes its appearance; and the rivulets are adorned with the bright pink blossoms of oleander, and afford water-cresses, a luxury abundant throughout Kurdistán, though unknown in Mesopotamia. On entering the hills the remarkable increase of animal and insect-life also attracts attention: large snakes of an ash-grey colour are very common, and we sometimes observed them engaged in captivating the beautiful lizards of the country: coleopterous insects, of brilliant colours, basked on the flowering plants; and there occurred, on a species of euphorbia, a yellow caterpillar with bright scarlet spots, and which attained from 3 to 4 inches in length, with a proportionate bulk of body.

Two hours' journey over the outlying hills brought us to a more lofty range of limestones and sandstones, which we crossed by a narrow glen, watered by a tributary to the Khazír, and

abounding in a varied vegetation, more especially of shrubs. About $2\frac{1}{2}$ miles up this ravine the valley widens, and gives off two other lateral and parallel valleys; that to the S. contains the village of Magheïrah: in the central valley is that of Kathandíyah, while to the right is the northern vale, more narrow and deeply clad with wood; and out of a dense and beautiful grove at the head of this rise the conical spires of the temple or tomb of Sheïkh 'Adí, at once a secluded and beautiful site. Sending the mules to a spring near Kathandíyah (temp. 59° Fahr., air 89·6), Mr. Rassám and myself turned up the valley of Sheïkh 'Adí, which is commanded by a conical summit of the same name. We scarcely expected to overcome so far the religious scruples of so severe and so mysterious a sect as the Yezídís, as to be allowed to penetrate into the sanctuary; but after taking a rapid sketch of the building, which stands at the base of a perpendicular cliff, and has two conical spires, one larger than the other, pointed, and supporting copper balls and crescents, we continued our way, and were met by the guardian of the place, who, with some slight expressions of distrust, ushered us to a gateway, which led into a vaulted stone passage, through the centre of which ran a stream of cool water. This passage was about 40 paces long, and led into an outer court, overshadowed by large mulberry trees, well paved with flags, and having large cisterns of clear water, besides separate bathing-rooms, for the ablutions previous to prayer. Tempted by the refreshing appearance of the water, as well as from policy, without speaking a syllable foreign to the ears of those present, we washed ourselves, and taking off our shoes, were admitted into a second and larger court-yard, with arched recesses along the sides, and the temple at the bottom. This spot was as clear, cool, and inviting as the first yard; and we could not help thinking what a delightful summer residence Sheïkh 'Adí would make. Descending a flight of steps, we now entered into the building itself. It was a great vaulted apartment, like an ordinary mesjid: on an elevated terrace within it, and screened by green curtains, was the coffin said to contain the remains of Sheïkh 'Adí. Round this were spots where fires of bitumen and naphtha are burnt at the time of the annual festival. Beyond this hall is an inner one, to which access was refused us. I, however, opened the door, and saw an apartment lower than the chief one, and containing only a few planks and other lumber,—a place most decidedly neither of sanctity nor of mystery.

We now asked the Yezídís present concerning the peacock, of which they at once declared their ignorance. The question was put to them publicly and so abruptly that no opportunity was given to prepare an evasive answer. I carefully watched the expression of their countenances, and saw nothing that indicated deceit; on

the contrary, the expression was that of surprise at the inquiry; and I am strongly inclined to think that the history of the Melik Táús, or king peacock, as related by Father Maurizio Garzoni, M. Rousseau, Buckingham, and more modern travellers, as Mr. Forbes, is a calumny invented by the Christians of those countries. I venture this assertion, however, with reserve; for it is curious that a Christian residing at Kathandíyah, in the neighbourhood of the place, still persisted in the truth of this tradition. The Mohammedan Kurds (not Yezídís), who served as muleteers, remarked to me, that I had myself found it to be a falsehood. The images of David and Solomon have no more existence than the peacock; and I need not add that the account of their assembling on the eve of the festival held on the tenth day of the moon, in the month of August, of the lights being extinguished, and of their holding promiscuous intercourse till morning, has every appearance of being a base calumny, assailing human nature in general, while aimed against the poor Yezídís in particular. I have seldom seen a more respectable, benign, good-looking Mullá than the one who superintends the church of Sheïkh 'Adí. I inquired when the great bitumen-fires, of which I saw the traces, were lighted. "On the night of the festival," was the answer. The broad blaze of numerous fires of mineral pitch light up a scene which the imagination of the ignorant and wilful Easterns has filled with horrors. My informant, however, whatever might be his doctrines, had the look of one habituated to a peaceful, meditative, and pious life, and most certainly not of the leader of vicious and licentious orgies.

The only peculiarity that I observed at Sheïkh 'Adí to distinguish it from any other mesjid were, besides the bitumen fires, some sculptures at the door, representing a large snake, painted black, and probably emblematic of Satan, the evil spirit, whom they rather propitiate than worship. There was also an ill-formed quadruped—it is impossible to say whether a dog, a horse, or a lion—and a hatchet.*

* The proof of direct worship of the Spirit of Evil has been mainly founded upon the fact, that no traces have been perceived of the worship of Yezdán, or Ormuzd, or the good principle, in opposition to Ahrimán, or the evil principle. This is at the best but a negative argument. Whatever has been propagated among these people of the ancient doctrine of the Parsís must be now corrupted by gross superstitions; and we may, perhaps, recognise in the sculptured idol accompanying the serpent, the emblem of Ized Ferfer, or other of the Parsí attendants upon the evil spirit. (Tennemann's History of Philosophy. Brussels, ed. fol., vol. i. p. 72.) The name Ized suggests a coincidence as curious as that remarked upon by Major Rawlinson from Theophanes, and a letter of Heraclius to the senate, noticing a position in Adiabene, called Iesdem, and which he considers as a settlement of Izedís, or, as they were afterwards named by the Mohammedans, Yezídís. (Jour. of Roy. Geo. Soc., vol. x., p. 92.) Major Rawlinson does not make any further remarks upon this sect; but it would appear from this passage that he regards them as Izedís, or followers of Ized, as suggested above, rather than of Yezíd, the second of the Ommiade Khalifs. They have, however, many

The village of Sheïkh 'Adí stands on the top of an adjacent cliff, above the prettily-situated temple. We partook of mulberries from the hands of those kind villagers, who, had all the accusations laid against them been true, would have acted very differently towards strangers visiting their most sacred place.*

The two largest villages of the Yezídís in this country are Bah 'A'shikah, at the western foot of Jebel Maklúb, surrounded by olive groves with stone-built houses, and pleasing situation; the next is Báh idrí, at the foot of Rabbán Hormuz, the seat of Sheïkh An, their patriarch. Besides this they are widely distributed through Bahdínán, and, as is well known, constitute the chief population of the Sinjár. Their villages are easily known by the clean whitewashed tombs with conical tops which generally crown some small eminence in their neighbourhood. On a first journey in Bahdínán I had been taught to look upon these as temples to the evil spirit; but a now extended opportunity of inquiry has satisfied me that they are exactly the same as the Ziyárets, or holy men's tombs, in the villages and mezárs of all Western Asia.

Tuesday, June 9th.—A gentle ascent led us to the crest of the Sheïkh 'Adí range, wherein a well-chosen and picturesque situation, as usual, was a burial ground of the Kurds. The sanctity of these inclosures, mostly situate on lofty and commanding positions, preserves the trees which are planted, or that spring up naturally, from destruction, and they thus afford the best specimens of the capabilities of the soil and climate for forest growth. Numerous vineyards occupied the hill-sides, and by these we descended into the small vale of Berbet, out of which ourselves and the rivulets found their way by a narrow and precipitous ravine in limestone, about ½ a mile in length, with a bad road, and which leads to the expanded and fertile valley of the Ghomár Sú, the head waters of the Khazír, or Bumadus. This valley is rich in vegetation and cultivation, and contains many villages. We crossed it in a diagonal direction, and in about 1½ hour reached a village at the foot of the range of hills which

superstitious traditions concerning this khalif. Be this as it may, the I'zed, Karuben, Sheïkh Ma'zen, or exalted doctor (as the evil spirit is variously called) of the I'zedís, is a corrupted doctrine, converted by the ignorance of the people alone into whatever exists of direct worship, by the same process that in the Roman Catholic Church the doctrine of the intercession of saints becomes in the hands of the uneducated, a real saint and even picture-worship.

* Kinneir speaks of the I'zedís as tolerant in points of religion, free from narrow prejudice, and possessed of noble and generous principles. The I'zedís of Bahdínán must apparently be distinguished from the same tribe in Sinjár. The great villages of the I'zedís of Bahdínán, more especially Bah 'A'shikhah and Bah Idrí, are the best built, most flourishing and cleanest spots in Adiabene, and the inhabitants are kind and hospitable to Franks, but they detest Turks, who never fail to heap upon them all kinds of absurd reproaches. There is no doubt that the I'zedis are quite open to a better education, and even to a more humane religion.

bounds the valley to the N. Here we first observed the horns of the chamois of Kurdistán; about 2½ feet in length, of a dark black colour, and curved inwards, with knots on the convex part.

The ascent of the hills, composed entirely of supra-cretaceous limestones, brought us into the region of the valonía oak, where the trees, however, were of spare growth. The ascent occupied 1½ hour, when we were agreeably surprised to find the range breaking suddenly off in a steep precipice, beneath which, at a depth of 800 feet, was a narrow vale, with many villages and gardens, and over which rose a huge mass of alternating limestones and sandstones, to the height of about 2000 feet, called the Chá Zírwár. We were obliged by this character of the country to alter our course, and keep up the side of the precipice, till, passing over some broken hills clad with forests of oak, we found ourselves in the valley of Chelókí, bounded to the N. and S. by narrow ranges of limestones, with a quâquâversal dip, rising so steeply and terminating in so sharp an edge as to look almost like walls of art, an appearance common to the outer ranges of limestone hills. Immediately N. of these double ranges is the lofty and Alpine chain of Gharah or Ghararah, separated in a direct line by a valley scarcely 1 mile in width from the Jebel Haïr or Chelókí ranges, and bounded to the N. by the great valley of 'Amádíyah. This chain, composed of various limestones and sandstones, separates the tributaries of the Great Zab and the Khábúr or Zákhó river from the tributaries of the Khazír, or Bumadus, and those of the Khosar, the river of Nineveh. It is prolonged to the N.W. by the Chá Spí, or Jebel Abyadh (white mountain)—Researches, p. 265—which, reaching the Tigris, is prolonged into northern Mesopotamia by the low sandstone hills which bear the old name of Jebel Gharah. To the S.E. the same chain is prolonged to the ravine of the Great Zab, and beyond that by the mountains designated as the Sar Hasan Beg, which will be afterwards described. The central chain of Gharah presents at times a common single crest, the lime rocks having a quâquâversal dip; but at times the union between the opposite beds is not perfect, and a craggy valley, of from ½ a mile to 1 mile wide, is left between walls of rock, dipping to the E. and W.

At the easterly foot of the Túrá, or Jebel Gharah, and near the village of Zindár, are some copious springs, furnishing a tributary to the Khazír; and near this we obtained a few organic remains, illustrative of the age of the sedimentary rocks of the Túrá Gharah. Our road was carried over this chain in a tortuous manner, chiefly through wooded and picturesque glens. The height of the summit level above the sea was, by boiling-point thermometer, 2187 feet: the culminating points may be judged to rise to 4800 feet. There was still a good deal of snow on the

eastern slope, and patches on the western. We halted for the night in a vale at an elevation of 3620 feet, without habitations, but having a fine spring of water. Temp. 52·7 Fahr.; air, 78·7.

Wednesday, June 10th.—We had nothing but a gently undulating and well-wooded country from our station of last night to the valley of 'Amádíyah, the bottom of which is occupied by a deposit of supra-cretaceous sandstone and sandstone conglomerate, of little adhesion, and deeply intersected by water-courses. From the undisturbed horizontality of the beds I was inclined at first to look upon this sandstone as a local deposit, filling up this great valley, but a prolonged investigation disclosed that this formation has been tilted up by the Ṭúrá Gharah, but not by the Ṭúrá Matíneh of the Chaldeans, or the Chá Matíneh of the Kurds—the range of mountains which bound the vale of 'Amádíyah to the E. or N.E.

The head waters of the Gharah river, a tributary to the Great Zab, spring from a slight swelling in the soil of the valley, about 12 miles W. of 'Amádíyah; while from the opposite side of the same eminence the waters flow to the Khábúr. A river which at the place of our descent was a mere brook became, before reaching 'Amádíyah, 15 yards in width, being supplied by mountain torrents, which issue from every gap and from every snow patch in the Ṭúrá Gharah and the Ṭúrá Matíneh. The detail of some of these will be given in the map.

The valley of 'Amádíyah, although containing many villages, belonging partly to Kurds of the Baḥdínán tribe and partly to Chaldeans, is but sparingly cultivated, being mostly occupied by forests of valonía oak, which more especially stretch along the eastern foot of the Ṭúrá Gharah from hence to Rowándiz, a distance of 3 days' journey, and this is the great district for gathering galls and valonía; for in our travels further eastward we scarcely met with any more groves, still less with forests of oak.

We had been accompanied from Móṣul by a Roman Catholic Chaldean, of the name of Dávud, a respectable gall-merchant of 'Amádíyah, who, being well acquainted both with the Kurdish and Chaldean dialects of the mountains, was engaged to act as interpreter. From this man, and from other inquiries instituted at 'Amádíyah and at Rowándiz, it appears that the perianth of the *Quercus valonía* is alone gathered for the market, but that galls are obtained both from the *Q. valonía* and from other oaks. I did not find them in the act of gathering, but the trees pointed out as furnishing galls were *Q. cerris, pedunculata,* and *infectoria.* The gall-apple, which is known to be the product of a species of *Cynips,* is only gathered from the stalks or stems; that on the leaves is pulverulent and useless. The zone of oak in these mountains extends from an elevation of 1500 feet to 2500 feet

above the level of the sea; above and below this the trees become mere shrubs.

The valley of 'Amádíyah, excepting the slight elevation intervening between the watershed of the Khábúr and the Gharah rivers, extends from the Tigris to the vale of Rowándiz, being, however, curved about 12 miles to the E. of 'Amádíyah, in the district of Zibeïrí, and is about 5 or 6 miles in width. The town of 'Amádíyah is built upon a rock-terrace of limestone; the only one which overlies the sandstone throughout the valley. This rock lies on the eastern side of the valley, and is an offset from the Matíneh range. The extent of the terrace, which is in shape somewhat oval, is ¾ of a mile in length, and ½ a mile in width. It is everywhere surrounded by cliffs, varying from 40 to 80 feet in altitude; consisting of compact limestone reposing upon sandstone. It took us 45 minutes to ascend from the base to the gate, the road being tortuous. There are two gates to the town, one to the N.W., the other to the E. The town stands on the eastern portion of the terrace, the remainder being occupied by graves and a square open castle, with circular towers at the angles, built by the late Beg of Rowándiz, when he sacked this place. The rock terrace is also defended at various points by guard-houses, towers, and irregularly-constructed bastions, with occasional curtains, which are not however carried round the rock. The town is all in ruins: of the houses formerly existing, only about one-third are now in repair or inhabited; and of the bázár about one-fourth is made use of, the remainder being in a state of decay. Above these perishing materials there rises a seráï, the residence of the páshá, the lower part built of stone, the upper of mud; and near it is a beautiful model of a pillar, a detached mináret, the only one in the place, and also near the only existing mesjid. At present the chief population of 'Amádíyah are Jews, who have 70 houses here and 3 synagogues. These poor people have among themselves a tradition that their ancestors have dwelt here from a period shortly subsequent to the captivity. The Mohammedans have 60 houses, and the Chaldeans have 20 houses, of which 5 are Roman Catholic. There are also 5 houses of Armenians, who pursue their usual avocations as jewellers, armourers, &c. There was a garrison of nearly 200 irregulars, chiefly Arnaúts and Greeks of Rúmelia.

The Chaldean community of 'Amádíyah, which remains stedfast to the ancient faith, has only one priest, a most simple kind-hearted man, called Ḳashiyá (priest) Mandú. Besides 'Amádíyah, the duties of his post extend over the villages of Bibábí, Ḥamzíyah, Belagháni, Arrishk, Haradán, Meristek, Komání, Derí, Derzín, Erdil, and Beg Kótí; a district of upwards of 40 square miles, which can be well supposed to derive little advan-

tage from a single spiritual instructor. Hence the progress of the Roman Catholic faith among the Chaldeans of Bahdínán, which has already gained over the villages around Zákhó, long since left without any teachers of the faith of their forefathers.

By the recent changes in church government effected in Móṣul in June, 1840, by the envoy of the Pope, M. de Villardille, bishop of Lebanon, Már Zahar, bishop of Móṣul, was made patriarch, with the title of Már Nicolaus; and to him were given Baghdád, Móṣul, and Al Kósh. Már Yúsuf assumed the episcopal supremacy over the town and district of 'Amádíyah; Már Petrós that of Jezíreh and Zákhó; Már Michael, of Se'rt; Már Básileis, of Diyár-bekr; Már Agathos, of Márdín; and Már Laurentius, of Kerkúk.

A Chaldean bishop was appointed, about seven years ago, to 'Amádíyah, by the patriarch Már Shim'ón; his name is Már Elias: but, after living at 'Amádíyah only one year, he seceded from the Chaldean, and became a convert to the Roman Catholic church. His character has, however, become suspected among the Roman Catholics, who have reduced him to the lower rank of priesthood; and he is strictly watched at Móṣul, as fears are entertained of his desire to return to the Chaldean church. He would not, however, be received in the mountains, where he is equally despised for his tergiversation by the laity and the clergy, the latter of whom are the more particularly indignant from the great responsibility of the charge entrusted to him.

Although the priest of 'Amádíyah, Kashiyá Mandú, received holy orders from Ish'íyah, Chaldean bishop of Berráwí, residing at Dúrí, he and his flock pay their tithes and contributions to Már Yúsuf, Roman Catholic bishop of 'Amádíyah, now residing at Al Kósh. This is in virtue of an arrangement made by the Roman Catholic church with the 'Osmánlí government, who would be less secure of their part of the revenue if it were paid to the bishop of Berráwí, while the Roman Catholics would naturally get nothing from a church from which they have seceded. Two other districts, that of Dirákan and that of Núrwár, containing many villages of Chaldeans, are similarly circumstanced: each of the above-mentioned districts has three priests.

The only antiquities which we found at 'Amádíyah were the foundations of a temple hewn out of the solid rock on the surface of the terrace. It is 20 yards wide and 30 long, and about 8 to 10 feet deep. At the E. end is a cut in the rock for an altar, and to the S. a sepulchral cave, divided into three compartments. In the interior there are three rows of pillars, shaped like obelisks, only truncated at the summits: this has all the appearance of being an ancient Persian fire-temple, and as such was known to the inhabitants. There is also a bas-relief of a

human figure, rather larger than the natural size, cut in the face of the rock below the N.W. gate. The figure is much mutilated; but what remains of it resembles in its details the statue in the cave of Shápúr, which is generally supposed to represent the conqueror of Valerian.*

Not far from 'Amádíyah is a small Chaldean monastery, untenanted and without doors. The town itself does not appear to have been a place much frequented by pious Mohammedans, as there are only two ziyárets in the mezár or burial-ground. 'Amádíyah stands in N. lat. 36° 47′ 29″, as derived from an observation of the moon's meridian height, and at an elevation by boiling-point thermometer of 4265 feet.

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* These vestiges of a Persian temple situate in one of the most prominent positions on the rock-terrace, and belonging, as would appear from the character of the statue sculptured at the portal of the city, to the early monarchs of the Sasanian dynasty, would indicate that one of the sacred fires or pyrea of the Magians existed at this place; and this, combined with the strong position of the fort, favours the supposition of its being the Assyrian Ecbatana of Ammianus (lib. xxiii. c. 6). Whatever may have been the original meaning of Akbatana, or Ecbatana, which, according to Major Rawlinson (Journ. of Roy. Geo. Soc., vol. x. p. 135), signifies a *treasure-city*, it is certain that that name was very generally applied: hence the great number of the Ecbatanas of antiquity. The city of this name, noticed by Plutarch in his Life of Alexander, was in Babylonia, and not in Assyria, and may be easily recognised, as the Macedonian hero went there next after the battle of Arbela. He was there particularly struck with a gulf of fire, which streamed forth continually as from an inexhaustible source. He also admired a flood of naphtha not far from the gulf. (Langhorne's Plutarch, p. 480.) This description applies solely to the Abú Jeghár, near Kerkúk, at which latter place is a castle-bearing mound of great antiquity, resembling that of Arbela, a city of the same date. It is not surprising that the Magians should have made these natural fountains of fire the object of a peculiar worship. Major Rawlinson (opus cit. p. 137) quotes the Asiat. Res. (vol. iii. p. 10) to show that so great was the veneration in which these fountains were held, that they were visited by devotees from India. But save the fires there are no remains of antiquity at the place nearer than Kerkúk, for I have carefully examined the site and circumstances connected with these natural fires. (Researches, &c., p. 212 *et seq.*) The site of the great Median Ecbatana has been satisfactorily determined by Major Rawlinson. But Stephanus Byzantinus says: "Est etiam oppidum Syriæ Ecbatana;" and we have the authority of Pliny and Hesychius that this was situate upon Mount Carmel. There was also a Persian Ecbatana: Pliny says, "Magi obtinent Passagardas castellum, in quo Cyri sepulcrum est: et horum Ecbatana oppidum." The Arsacian Ecbatana which appears to have been identical with the Ragau of the book of Tobit and the Rhages of the historians of Alexander, is represented according to Major Rawlinson by the ruins of Kal'eh Erig, near Verámín. If it can be shown, then, that there were two Median Ecbatanas, one Persian, one Syrian, one Babylonian, and one Arsacian, I can scarcely see the grounds for scepticism as to the existence of an Assyrian Ecbatana. Mr. Rich found that 'Amádíyah was still known to some by the name of Ekbadan; and although my inquiries on this subject have not yet been attended with success, Mr. Rich was far too careful a registrar of facts to have been easily misled, and too well acquainted with the Asiatic character to have founded his statement upon a leading question, such as "Do you call this place Ekbadan?" which, if the affirmative is supposed to be sought for, will always be given.

Our questions led to the following results: first, that the Kermánjí, or Kurds, know the town universally by the name of 'Amédi, or "the town of the Medes;" and that 'Amádíyah is a corruption of this name by the Arabs and Turks, not known in the mountains: they in the same way change the name of the Berráwí into Berráwíyah; that of Tóbí into Tobíyah; and so on with many other Kurdish and Chaldean tribes. Secondly, that they have a tradition that the town, notwithstanding its Median conquerors and Magian worship, was founded by the Apocryphal prophet Tobias.

The same night that we arrived at 'Amádíyah, the Chaldean mountaineers made a descent upon a Mohammedan village, peopled by the descendants of an Amír Sayyid, or chief descended from the Prophet, only a mile from the town; and from all the information I could collect, although most anxious to disbelieve it, only two persons out of forty escaped the general slaughter. I never could learn exactly who were the authors of this atrocious and indefensible crime, for in the interior I did not find the men, even in arms, although threatened with war on every side. It is difficult, however, at a distance to form an idea of the hostility existing between the Chaldeans and Mohammedans. The Mohammedans themselves did not refrain from constantly expressing, even before us, their jealousy and abhorrence of the followers of a despised and detested religion, retaining its independence in the heart of Islamism. When a Tiyárí man comes to 'Amádíyah he is subjected to every kind of indignity and insult, spurned, kicked, and spit at. His Redeemer is cursed and vilified to his face; often they are seized and made to work, and many have been put to death. Thus persecuted, it is not surprising that in time of war they retaliate upon their oppressors in a sad sanguinary spirit; their passions are too fearfully roused, and the hatred too deep and long endured, to subside in mercy and forgiveness; and ages of tyranny and intolerance have driven from their bosoms all feelings of pity towards their haughty and implacable Mohammedan enemies.

At this time Mohammed Páshá, of Mósul, was, with his detachment, encamped at a short distance from 'Amádíyah, the Kermánj chieftain of which had taken refuge in Kumrí Kal'ah in the Berráwí country. This day he came up and pitched his tents within a mile of the town; and greatly did the officers rejoice as they spoke of what they deemed certain—the immediate subjection of the Chaldean mountaineers. In the evening the rocks were lined with soldiers firing salutes, which were answered by the guns from the camp; but we went into the heart of the country, and returned from thence, while the 'Osmánlí Páshá was engaged in making overtures to the chiefs, without the least chance of success; and when we returned to Mósul, he had retired without being able to effect anything beyond the pacification of a part of his own province, by the occupation of Akra' and the expulsion of the old governor of 'Amádíyah.

Aware that the roads were now occupied by armed mountaineers, who perhaps might not put much faith at such a moment in the avowed purpose of our visit, we immediately on our arrival sought out and found with difficulty a man whose poverty and rags might serve to protect him, while he ventured to the Bishop

of Berráwí to announce our coming, and request a free passage. We spent two days, tormented by sand-flies, waiting for this messenger, who at length arrived the morning of the 13th, when, issuing by the eastern gate, to avoid observation, we got into the gardens and vale N. of 'Amádíyah, accompanied by our messenger and the priest Mandú, who had volunteered to go with us to the patriarch.

The pass of the Matíneh mountain is exceedingly beautiful. Near its foot a mountain-torrent (Suláf cháï) comes tumbling over the rocks, amid precipitous cliffs variegated by a rich vegetation and long pending stalactites or a rough covering of travertino deposited by the waters; climbing and creeping plants swing in flowery festoons down the water's edge, petrified in their course, and their verdant foliage is rivalled in various tracery by the stalagmitic deposits. The torrent forms three successive falls of from 18 to 20 feet in height, alternately losing itself in caves of green foliage or re-appearing as a sheet of white foam. After about half a mile of open valley the second part of the pass is attained. It is a narrow gorge in limestone rock—the first of the redoubted *pylæ* of the Hakkárí country. The mountain of Beshish is to the E., that of Sheïkhtán to the W. The pass itself is called Geli Muzúkah. An ash-coloured snake, having bright yellow bands, waved itself occasionally up the smooth and perpendicular face of the rock; but its progress under such circumstances was very slow, and it might have been easily killed. The Asiatics generally appear to entertain a great prejudice against snakes, which they always destroy when possible, although the poor creatures are never the first aggressors, and so much to be admired for their great beauty of form and colour, and the elegance of their movements. The houses in Móṣul abound with them, but, as is always the case with Nature's productions, they fulfil a beneficial purpose. Ants swarm in these mud-hovels, and these are checked in their increase by the flat-toed lizard, which itself would become numerous as a plague if it were not for the snakes, which also moderate the productive powers of the bat-tribe.

A little beyond the Geli Muzúkah is an isolated rock called Perí Bálgáh-sí, or the Honey-place of the Fairies, apparently inhabitants of Kurdistán. When we got to the crest of the chain we found ourselves amid patches of snow, at an elevation of 5840 feet; and below us the summer-quarters of the people of 'Amádíyah, which they had not occupied this year on account of the war. It was a delightfully cool pasture, and possessed one mud-building, the palace of the Páshá. These spots, named Yäïlá by the Turks, are called by the Chaldeans Zómá, and by the Kurds, or in Kermánji, Zozan—the present one Zozan Nav-dashtí.

From this point the extensive district of Berráwí extended before us; in our neighbourhood was a long valley dotted with villages of industrious Christians, while at its head was a peculiar rounded mountain, rising above the village of Dúrí, the seat of the bishop of Berráwí. Beyond were two distinct lofty and snow-clad chains of mountains—the one, Túr Devehlí, extending from N. 5 E. to N. 25 W.,—the other, Túrá Shíná, the extent of which was not well defined. To the W. the valley opened amidst mingled forests, rock and arable land, above which rose a group of rude peaks, one of which bore Kumrí Kal'ah, the present asylum of the Kurdish chief of Bahdínán; beyond which appeared a snow-clad group of mountains, the name of which I could not learn. They were the mountains at the head of the Buhtán country.

The chain of Matíneh which we were now crossing, is, it may be observed, the continuation south-eastward of the Jebel Júdí, on which local tradition places the Ark, and which divides to the N. the country of Buhtán from that of Bahdínán, and in the centre that of Hakkárí from the same country, for the tribe of Berráwí belongs to the Hakkárí country. The four great tribes in northern Kurdistán are Bahdínán, Buhtán, Hakkárí, and Rowándiz. The Bahdínán comprehends the sub-tribes of—1. Sindí or Sindíyah (which latter syllable is generally added to all the tribes when spoken of by the Arabs); 2. Sleïvání; 3. Golí; 4. Goyí; 5. Artúshí; 6. Derrán; 7. Kaïdí; 8. Sheïkh An (Yezídís); 9. NavKúr; 10. Bowát; 11. Nájúkúr; 12. Kal'atí; 13. Kal'ah Deïr; 14. Serújí; 15. Shirwán; 16. Baradós; 17. Gerdí; 18. Misúrí; 19. Berráwí; 20. Dóskí; 21. Kerkí; 22. Rekání; 23. Nerwí; 24. Berráwí Júr; 25. Góví; 26. Telí; 27. Zitk; 28. Sherm; 29. Zobar. The last is the largest sub-tribe.

The Hakkárí, upon whose country we are now entering, comprehend—1. The Tiyárí; 2. The Tóbí; 3. Jelláwí; 4. Piniyaniskí; 5. Al Tóshí; 6. Artóshí Báshí; 7. Bází; 8. Sátí; 9. Oramárí; 10. Júlámergí; 11. Jellú; 12. Dez; 13. Siliyáhí; 14. Berráwí.

The Christian villages belonging to these tribes, as far as we were able to ascertain, were as follows:—

1. *Tiyárí.*—1. Ashitáh; 2. Zawitháh; 3. Miníyání; 4. Márgí; 5. Kurkáh; 6. Lizín; 7. Jemáthá; 8. Zermí; 9. Shút; 10. Ráwálá; 11. Tel Bekín; 12. Beilcithá; 13. Oriáthá; 14. Rowárrí; 15. Lagípá; 16. Mathá Kásr; 17. Bezízú; 18. Rúmthá; 19. Sádder; 20. Serspíttín; 21. Betkhi; 22. Nehr Kal'ahsí; 23. Chamání; 24. Kal'ah thání.

2. *Jellú.*—1. Alsón; 2. Jellú; 3. Ziríník; 4. Marzáyá; 5. Thiláná; 6. Ummút; 7. Zír; 8. Sirpíl; 9. Bobáwá; 10. Bibokrá; 11. Shemsikí; 12. Murt-oríyí.

3. *Júlámergí.*—1. Júlámerik; 2. Kóch Hannes; 3. Burjullah; 4. Espín; 5. Gavanís; 6. Kotranís; 7. Euranís; 8. Syríní; 9. Bekajik; 10. Daïzí; 11. Shamáshá; 12. Murdádishí; 13. Madís; 14. Merzín; 15. Zerwá; 16. Derikí; 17. Kermí; 18. Gesná; 19. Kalánís; 20. Khazákiyín; 21. Kewulí; 22. Meïlawá; 23. Pisá; 24. Alónzó.

4. *Berráwí.*—1. Bebál; 2. Ankrí; 3. 'Malaktah; 4. Bismíyáh; 5. Dúrí; 6. Iyát; 7. 'Aïnah núní; 8. Akushtá; 9. Misakah; 10. Robarah; 11. Dergáli; 12. Tashísh; 13. Básh; 14. Hayís; 15. Derishkí; 16. Máyáh.

5. *Tóbí.*—1. Gundukdá; 2. Muzrá; 3. Tomagó; 4. Berijáï; 5. Jissah.

6. *Báz* or *Bází.*—1. 'Orwántiz; 2. Shoáváh; 3. Argúb; 4. Kojíjah.

7. *Dez.*—1. Rabbán Dádishuh; 2. Maddis; 3. Chírí; 4. Suwá; 5. Golosel; 6. Már Kiriyákós; 7. Akóshí; 8. Chalchan; 9. Gorsí; 10. Savams; 11. Chemmáshá.

Besides these there are several districts containing villages comparatively insignificant, of which neither the number nor locality was noted:—

1. Waltí; 2. Neívdí; 3. Gesnák; 4. Daprashín; 5. Búrun; 6. Bíljání; 7. Garwár; 8. Albak (between Júlámerik and the Lake of Ván); 9. Shemso-d-dín; 10. Shapát; 11. Bratsínnaï; 12. Dirakán, and 13. Nurwár in 'Amádíyah or Bahdínán.

I subjoin the following as the best estimate that I can form of the population of Hakkárí, founded upon personal observation of the various sizes of the villages and of the reports as to their number. It differs very much indeed from others previously published; but these have been founded chiefly upon Oriental exaggerations. The fallacy of Dr. Walsh's estimate of 500,000 Christians, for example, must be manifest to all who will consider the small extent of country occupied by these Christians and its limited productive capabilities:—

1. Tiyárí .	21 vill.	at 20 houses each	480	houses at 8 persons	per house	3840
2. Jellú .	12	"	240	"	"	1920
3. Júlámergí	24	"	480	"	"	3840
4. Berráwí	17	"	340	"	"	2720
5. Tóbí .	5	"	100	"	"	800
6. Báz . .	4	"	80	"	"	640
7. Déz . .	11	"	220	--	"	1760
						15,520

To which are to be added out of Hakkárí—

In Bahdínán 11 villages, 220 houses, and population . .	1760	
Town of 'Amádíyah 20 houses	160	
		1,920
And 13 districts not well known, which may be estimated at 100 houses each, or 1300 houses and a population of		10,400
		27,840

The Chaldeans in Persia, the Roman-Catholic Chaldeans in the same country, and the Roman-Catholic Chaldeans in Mesopotamia and Adiabene, taken together, are, on account of the greater resources of these countries, probably more than double the population of Chaldean mountaineers, or Chaldeans of Hakkárí and Bahdínán.

About an hour's descent brought us to the village of Hayís (Chaldeans), where we found the bishop of Berráwí waiting for us. This first specimen of a chief dignitary of the Chaldean church was highly favourable. I had expected a bishop with a dagger and sword—perhaps, as it was time of war, with a coat-of-mail; but instead of that, we saw an aged man, of spare habit, with much repose and dignity in his manners, and a very benevolent and intelligent aspect; his hair and beard nearly silver-white, his forehead ample and unclouded, and his countenance, from never eating meat, uncommonly clear and fair. On meeting us, he held out his hand to be kissed, and we were then intimate friends. The happy moral influence of Christianity could not be more plainly manifested than in the change of manners immediately observable in the country we had now entered into, and which presented itself with the more force from its contrast with the sullen ferocity of the Mohammedans. The kind, cordial manners of the people, and the great respect paid to their clergy, were among the first fruits of that influence which showed themselves. As we proceeded on our journey the peasantry came from villages even half a mile from the road, to kiss the Bishop's hand; and Kashiyá Mandú also came in for a share of the reverences. Little children who could not reach the hand of the Bishop were held up by their parents, and every where the same pleasing testimonies of grateful affection were exhibited.

An hour's journey brought us to a perpendicular precipice of tabular slaty limestone, about 250 feet deep, and at the bottom of which rolled the Robar Elmeï, a torrent 12 yards wide by 1 in depth, which flows to the Zab. On the opposite side of the river was a conical hill, bearing a ruined castle, formerly very extensive: I could learn nothing concerning its history. It is called Kal'ah Beïtannúrí, and is curiously connected with a tribe of Jews who reside at the foot of the hill in the village of Beïtannúrí (*House of Fire*), where they have a synagogue, and who lay claim to this place from remote antiquity.

Our road lay down the Robar Elmeï, which we crossed on a wooden bridge, passing several Chaldean villages, and then up a tributary stream to the large village of Dúrí, where the people were waiting for evening prayer; but the Bishop finding it late after performing his ablutions, renounced his intentions, and we walked from Dúrí about half a mile to a picturesque and wooded

glen, wherein were a few hamlets, one of which was the Bishop's residence, while up above, and surrounded by trees, appeared at the foot of a cliff a little whitewashed church, partly hewn out of the rock. This is Már Kiyomah, where the Bishop generally officiates.

Having taken up our quarters on the roof of a house, pleasantly overshadowed by a huge mulberry-tree, evening prayers were said; when I first found out that a person whose clothes were all tattered and torn, whose aspect bespoke the greatest poverty, and who on the journey had always marched before the Bishop, carrying a stick with a certain degree of pomp, was no other than the Bishop's chaplain. After prayers came meals; the Bishop and ourselves eating first, then the ragged but worthy chaplain, the priest Mandú, Dávud and other chiefs of the group; and lastly, the servants went to work with a general scramble. At night the roof of the house presented a happy scene of patriarchal simplicity—two peasants and their wives, two cradles and their noisy tenants, two priests with daggers in their girdles, the chaplain, ourselves, muleteers, servants, &c., were all picturesquely distributed over a space of about 12 yards by 6.

Sunday, June 14th.—At divine service this morning before day-break, the sacrament was administered to all present, boys included: raisin-water supplied the place of wine. The cross on the door of the church, the cross on the altar, the Holy Scriptures, and the Bishop's hand, were alone kissed. The cross used by the Chaldeans is rather an emblem than a representation of the instrument of our redemption: its form is this ✠. Such crosses are made in brass, or cut in stone on the churches, as doorways, and often on a large stone at the entrance of a Christian village, and it is kissed by the devout on going out or coming in: the Chaldeans generally make the sign of the cross, but Már Shim'ón, when prayers were said at Júlámerik, observed no such form.

After breakfast we went to the church at Dúrí: like the rest, it presented to our examination only a rudely constructed and vaulted building of stone, into which but little light was admitted by apertures more like loop-holes than windows, perforated in the upper part of the rear gable-end. The altar was at the east end, and beyond it was a recess for the communion-table, approached by a low door: the whole apparatus of the church service consists in a copy of the Liturgy and of the New Testament, a brass cross, a bell to ring, an incense vase or chafing-dish, and a cup for the administration of the sacrament. Generally the interior of the churches are lined with printed calicoes or other ornamental cloths, often very ragged, but as it was time of war these were taken down lest they might attract

parties in search of plunder. There are no seats in the churches, and the men and women stand together; the latter never cover their faces, nor are they in any way debarred from free communication with strangers or friends. The people were free yet respectful in their manners: their curiosity was very great, and became sometimes rather trying on the road. Of arms especially they are very fond, and could never let ours alone, although percussion guns and pistols are dangerous things to play with: there was also no keeping their hands out of our travelling-bags. The men wear their hair plaited in a single tress, which falls from the back of the head: this is surmounted by a conical cap of white felt, which makes them look uncommonly like the pictures given of the Chinese. Their best travelling-shoes are made of chamois-skin, with a strong netting of string, but those for ordinary wear are made of felt and require mending every journey; for which purpose each man carries a large needle in his breast.

We spent the evening with the Bishop. We were in a grove of luxuriant growth and variegated foliage; golden orioles sang from the shades, and pigeons cooed from the rocks above; the men sat round and patted us on the back with the familiarity of old acquaintance, and the women crowded to enter into the passing conversation.

The villages of Chaldeans in Berráwí having priests, are: 1. Bebal; 2. Ankarí; 3. Malaktah; 4. Halwá; 5. Bismíyah; 6. Dúrí; 7. Iyát; 8. 'Aïná Núní; 9. Derishkí; 10. Mayah; 11. Akushtá; 12. Misekeh; 13. Robárah; 14. Dergehlí; 15. Taskísh; 16. Besh; 17. Harís: of these Derishkí and Mayah alone have no churches. The Bishop of Berráwí is the only church dignitary in the mountains besides the patriarch Már Shim'ón.

Monday, June 15*th*.—We started early in the morning to visit the iron-mines of Berráwí, in the mountain of Dúrí. We found these mines to be worked on the surface in beds of oxide of iron, disposed parallel to the strata of a fissile yellow limestone dipping W. at an angle of 26°. These yellow limestones belong to the upper chalk formation, and the feroxides (fer limoneux of Beudant) occur in them in beds instead of nodules, as is commonly the case in this formation: these deposits have never been extensively wrought, though sufficiently for the wants of the people. The reason that the Kurdish and Chaldean mountaineers value their mines so much and are so jealous of them, is that what little produce they derive from them they convert to their own use; which is not the case in Turkey in Asia, where the mines are either disregarded or else wrought by government, often in the vain hope of getting gold or silver from them. Hence these mountaineers think that if an intelligent nation had possession of their

mines, incalculable riches might be derived from them, which is quite a mistake: they themselves are only acquainted with five mines in all Hakkárí. I have examined three out of the five, and strongly suspect that none possess such advantages as would make it profitable to transport their ores over the mountain roads. I only wish I could have convinced the mountaineers of this, even half so firmly as I was convinced myself; how much suspicion and ill-feeling regarding my mineralogical researches I should in that case have escaped!

We had a steep descent from the Túrá Dúrí, and reached a valley nearly filled up with snow, upon which lay a whole grove of trees that had been carried down by a land-slip. The Bishop's residence at Dúrí was at an altitude of 4917 feet; the crest of Dúrí 5792 feet; the vale with snow 5133 feet; from hence we ascended again over rocks of blue limestone to the crest of the Deralíní hills (alt. 5811 feet), from whence we had a prolonged descent of 1½ hour, at a quick pace, to the village of Gun-duk, inhabited by tributary Kurds. This deep valley reaches down to the banks of the Zab; it is bounded to the N. by the great range called Karási Tiyárí, which forms the western boundary of the Tiyárí district, although the outlying village of Gun-duk is tributary thereto. On the S. side of the Zab and opposite to this valley is a well-watered verdant vale, inhabited by the Chál Kurds, who hold out against the Tiyárí.

During the descent of the Deralíní, Dávud fell from his mule and hurt himself, so that we were obliged to stop a short time at Gun-duk. We had scarcely left this village, and were travelling along the sides of the Karási Tiyárí, when a man came running in great haste out of the woods to inquire where we were going, and who we were; our guides having satisfied him upon these points, we were allowed to proceed. The path or mule-way, for it was never anything more, took us round the southern slope of the Karási Tiyárí, where its huge shoulder presses down upon the valley of the Zab. This rapid river rolled along amid impracticable precipices, nearly 1000 feet below us. Its course could be traced for some distance, but, except two narrow and alpine vales, watered by mountain torrents, and inhabited by the Chál Kurds, there was nothing but bold masses of rock rising above one another, and increasing in height eastwards to the mountain of Tsariyá and the Túrá Shíná. The Karási Tiyárí is composed of micaceous sandstones, becoming very schistose, and passing into rude mica-schists and clay-schists, with quartz rock in beds and dykes. These rocks were sometimes of a red colour, sometimes black from the presence of carbon.

As we opened upon the valley of Lizán, or of the Miyáh Izání (river of Izání), a scene presented itself more interesting than

anything we had yet met with in the mountains. Before us was an alpine range of limestone rocks, stretching E.N.E. and W.S.W., with lofty precipices fronting the W., and in their unsevered rectilinear prolongation appearing to form a barrier against all further progress. There was, however, one gap in this formidable rampart, through which the Zab found its way, to obtain, as it were, a little comparative repose at Lizán, where its bed is wide and less rocky. It is crossed by a bridge of ropes, which at a distance look like a single coil, and on the left bank is the Kurdish village of Jenán, while on the right is the great Chaldean village of Lizán, governed by an old gentleman who styles himself melik or king, but who is under a superior melik of Tiyárí, now in the mountains. The cottages of Lizán were not all grouped together, but were scattered among groves and gardens, and being built in a Swiss style, had a most pleasing appearance. A practice also obtained here, which we afterwards found to be general among these people, of sleeping in summer not upon the roofs of the houses, but upon a frail scaffolding of four poles supporting a floor, sometimes small, sometimes large enough to contain a whole family. These bedsteads are from 10 to 20 feet in height, sometimes in the fields, even amid rice-grounds, but oftener upon the crest of little hills, or in places exposed to the wind; by this means they avoid to a certain extent the musquitoes, which abound almost generally throughout Kurdistán.

On approaching Lizán, a person having apparently some authority came out with others to meet us. He received us at first with some distrust, but our country and pursuits being explained, we were welcomed and taken to the roof of a house overshadowed by a huge walnut tree. But we had espied, about half a mile from the village, and pleasantly situated upon the banks of the Zab, a neat whitewashed church, embosomed in a grove of mulberry and pomegranate trees. To this, accordingly, we repaired, and took up our quarters in the burial-ground, refreshed by breezes from the Zab, which rolled by us at a rate of 6½ miles an hour.

We had not been long seated before the melik made his appearance, an old man with nothing peculiar about him; and shortly afterwards the priest of Lizán, one of the most engaging and best informed men we met with among the Chaldeans. The polished manners, the learning, and the kindly feeling of this man must have been all acquired in the mountains, for he had never been out of them, and if he had he would not have found at Móṣul on one side, or at Urumíyah on the other, any examples to profit by, his manners being superior to anything I have observed among the natives at either of those places. Quiet, unassuming, yet intent in his arguments, there was nothing but his dress to distinguish him from an English country clergyman.*

They treated us as usual most hospitably, but without meat, which was all the better for us at this season of the year. Here, however, we got some fish, which is abundant in the Izání, into which river it ascends during the time of floods, and is afterwards caught by a dam put across the stream, with openings into little cells having a flooring of basket-work to let the water through. There is always a bad man in every large company, and one dissatisfied fellow this evening got up the old tale of mines and foreign conquests, but we put him down very quickly, and sent him away to enjoy the society of his own sullen self and mind of evil forebodings.

Lizán church was found, by an observation of Jupiter on the meridian, to be in N. lat. 36° 53′ 50″. There are several roads from thence to the Hakkárí country, but all of them have to compass the ascent of the great limestone range immediately E. of the valley. One of them is carried over the side of the Tsariyá Mount, E. of the Zab, but is not accessible by mules. All the rest present great difficulties. Anxious to see as much of the Tiyárí country as possible, we proceeded (Tuesday, June 16) up the valley of the Izání, with the view of visiting Ashitah, the largest of the Tiyárí villages, and said to contain four churches. We were accompanied by three armed Chaldeans, sent with us by the melik of Lizán, who disappointed us in our objects without making us aware of the fact, till too late to be remedied.

At a short distance beyond Lizán we passed the village Miniyání, divided into two parts, upper and lower, about a quarter of a mile from one another; and 3 miles from the same place the village of Umrah, beyond which, 1 mile, was Zawithah. The whole valley presented beauties equalling anything in the Alpine districts of Europe. Beyond Lizán the valley begins to rise, the river flowing through a ravine below; but above this, and at the foot of the stupendous cliffs which guard the valley, is a shelving portion of declivity, which is everywhere cultivated, overgrown with trees, or studded with the pretty cottages of the mountaineers. Every available plot of ground is cultivated in terraces, rising one above the other, and the rocky interval that separates them is covered with fruit-trees or tall poplars for building. The system of irrigation practised on these terraces is very perfect; I counted twenty-five terraces sown with rice, the most common crop, all under water at the same time. In the middle of the valley the cultivation and cottages are mostly on the S. side, and above the level of the river (Izání), but higher up they occupy both sides equally, and extend to the banks of the stream. Cultivation attains its greatest altitude at Zawithah. The village churches—edifices of simple structure, without tower or steeple, but neatly

whitewashed—are generally built on some eminence or slight elevation of ground. Umrah has two of these, both occupying picturesque situations. The little wooden platforms for night-rest are sometimes disposed, eight or ten in number, round an enclosed but uncovered space, where in summer-time the family or families meet together at sunset, and converse previous to retiring.

At Umrah we commenced the ascent of the mountain. The heat of the sun rendered the toil most severe. In one hour's time we reached the foot of the cliffs, the mules working up behind; we then turned along the face of the precipice near its foot. The road was so bad, that we had twice to load and unload the mules; at length we reached a gap in the rocks which led us to a vast growth of fennel, which announced proximity to the snow line. A number of peasants were occupied in cutting this useful plant, which constitutes the winter stock of cattle provender. When green it is chopped and put into sour milk, to which it gives a pleasant aromatic flavour. Two species of fennel abound here, and it is remarkable that they respectively favour opposite sides of the mountains. With them grow Alchemilla alpina, Trifolium alpestre, Stachys alpina, and a Lobelia. We had not yet, however, attained the beautiful Alpine vegetation which we were afterwards presented with. These heights were now arrayed in their most attractive green, and the relief to the eye was very great. The crest of the Kuríkí, the mountain we were now crossing over, leaving Ashitah to the left or W., was 7652 feet in elevation; the culminating point of Kurikí, clad with snow, must exceed 8000 feet in height. The descent was still steeper than the ascent, and rendered difficult by the nature of the rock, a slaty argillaceous limestone, which dipped parallel with the slope of the mountain, leaving smooth surfaces to slide over, and it was impossible to say sometimes how far these slides might be carried. On the side of the hill, not far from its base, is a rude rock called Taraspino, into which a gallery is pierced for working an apparently promising vein of galena, but it is only wrought when there is a demand for bullets. The veinstone was barytes, and I got some pretty crystalline calcareous spar; the forms, however, were not uncommon. Madreporites abounded in this limestone.

I arrived at Taraspino, a large village at the foot of the mountain, with a Greek servant, who is a good pedestrian, about an hour before any of the remainder of the party. Having saluted the peasants, and partaken of some sour milk brought by the women, I went, before a crowd could collect, to the forge, which consisted of a small single furnace without chimney, but with bellows of adequate size. The crucible would not hold above

20 lbs. avoirdupois of metal; and it is evident that it is only smelted for bullets or some other such purpose. The lead is not oxidated for silver, as there was no furnace for the purpose.

Soon after the arrival of the party the whole village, men, women and children, crowded round us. They willingly gave us specimens of ore, yet to my surprise the guides declared this a bad village, and that we must go on; I believe it was owing to our Mohammedan muleteers who had been threatened.

We accordingly started for another range, formed of quartz rock and schist, and gained the crest after little more than an hour's foot work. We then continued along the side of the hill, over several snow patches, and above the valley of the Zab. Mr. Rassám and Dávud began to give me uneasiness, as they were far in the rear and had several tumbles; Mr. Rassám was complaining of his chest, from which he afterwards suffered much, and it was growing dark. At length, just after sunset, we came to a summer pasture around a great patch of snow, called Zómá Suwarrí. There were a few peasants here, and we drew up and waited for stragglers, spending a night of a most agreeable and invigorating temperature at an altitude of 7169 feet by boiling-point thermometer. The shepherds had with them some specimens of the fine mastiff of Kurdistán, which in outward appearance very much resembles the St. Bernard's breed, but is more shaggy.

There is a road carried across the mountain at a lower level than the one we were at present following, and which is only available during a short season of the year. Upon that road a monastery was built some years back for the entertainment of travellers, and a certain sum of money was given by the Chaldean church towards its erection. But a melik, by name Melik Khiyo, in whose district was this charitable institution, was found guilty of perverting the funds placed at his disposal to his own advantage, and came under the displeasure of Már Shim'ón, apparently for other evil doings, so far as to be excommunicated from the church. He is now in consequence at enmity with Már Shim'ón, and hearing that some Franks were upon the road to visit the patriarch, he concluded, as is customary in this country, that we were bearers of presents, which he resolved to appropriate to himself. The plan he adopted was to send two armed men, who met us on the road next day, and with many polite words expressed their astonishment at our having come so difficult a road, regretted our fatigue, requested that our guides should be sent back, as they would now see us safe to a place of refreshment, and thence across the mountains. These kind proposals not being accepted the argument was changed, and the conversation was more particularly directed towards the guides, who were

told it was better for them to return, as the melik was determined to fight us, and they might come off badly. They, however, remained firm to their post, and we heard no more of the matter.

The prospect from the Zómá Suwarrí was very grand, the rock scenery being bold and various. To the N., range after range of rugged mountains succeeded one another like giant walls so rapidly as to make it inconceivable how such a country can be penetrated. Five different ranges presented themselves between us and the snow-clad uplands of Júlámergí and the head-waters of the Zab. To the S. were all the long crests of rock we had toiled over, the summits of Túrá Shíná and Kuríkí rising over all; and after all our labour the gap by which the Zab found its way into happy Lizán appeared quite close to us, but at a depth that diminished the trees and buildings into points pricked on the rock's surface.

Wednesday, June 17th.—Our road still lay along the side of the mountain, the snow was more abundant, and the slope often very steep. Those who got over first stopped to laugh at those who came behind, for the falls were even more ridiculous than dangerous. In one place the mules had to pass under a waterfall at the head of a glacier, when their burthens were well wetted—on two occasions they had to be unloaded. It was on the side of this mountain that we found waiting for us the persons before alluded to. A little below was a Zómá, sprinkled with the large bright blossoms of the crocus alpina and azalea procumbens, besides several species of squill and the clustered umbel of a spiked ornithogalum and common blue hyacinth.

We observed on the sides of this mountain a considerable change in the vegetation, indeed we found almost every range more or less characterised by the preponderance of certain forms over others, and the vast numerical increase of a few social species. Here three species of plants excluded almost all others; they were the Astragalus tragacantha (great goat's thorn), Tragopogon orientalis (goat's beard), and Rhamnus saxatilis, the berries of which are used by the Easterns to dye leather yellow. It must not, however, be confounded with the yellow berry of commerce, which is the produce of R. catharticus. Goats and sheep feed upon all these plants, as did also our mules; and flocks were numerous on these well-clad hills. It is remarkable of the Tragopogon orientalis that its geographical distribution is very various, and that though abounding on the plain of Adiabene, it yet does not cross the Tigris. Its white stem when first pushing out in spring is abundant in the market of Mósul, where it is brought from the plains E. of the Tigris; and, although wild, it is incomparably the best vegetable which this country affords. The stem

makes a pleasant salad, and in the mountains is peeled and eaten raw.

On our descent dwarf-almond and Azalea procumbens became abundant. We got down to the valley of Ithá by means of a glacier or snow-patch, about a mile in length by 300 yards in width. It sloped more gently than some preceding ones; and although perforated by a mountain-torrent it bore mules and men in safety, and with our shoes off we could run or slide down, which was a great relief after the continued stepping from rock to rock. The valley of Ithá is beautifully situate, being encircled on the N. by lofty snow-clad mountains, the Tusání Túrá, the rocks of which dip N., while they present bold precipices towards the valley. There are here three villages—Ithá, Pír Beka, and Galithá. After stopping a short time at Pír Beka, where we got our favourite dish of boiled wheat in sour milk, we proceeded down the valley of the river of Ithá to the bridge which is opposite to Galithá. The torrent (for it was nothing else at this season of melting snows) was there 15 yards wide by 5 to 6 feet in depth. The bridge was ingeniously made of wicker-work.

From Galithá we commenced another ascent almost as fatiguing as that of the Kuríkí. Half way up this ascent I had the curiosity to pass with the water-course through the heart of a glacier for about 600 yards, when I reached the other side; the effects of light and shade within this icy tunnel were beautiful, and the fine expanse of marbled arch was pleasing to the eye, but it was like walking in a drizzling rain. In winter-time the inhabitants here descend the mountains on sledges of very simple construction: a single piece of wood slightly concavo-convex, or boat-shaped, has a deep notch in front, to which a cord is attached, and the navigator pulls hard in the direction opposite to that in which he is going; still he must exceed our railways in speed when launched upon an even declivity of snow with a slope of from 15° to 20°.

Having gained the crest, we had nothing to do but to descend another glacier, and it was the work of a few minutes to lose the elevation which it had taken us upwards of an hour to ascend to. We then found ourselves in an alpine valley, overgrown with fennel and a rank, marshy vegetation, at the lower part of which was the village of Malótah, where we passed the night, much against the will of our guides, as the inhabitants were Kurds. These people were in extreme poverty, living almost entirely upon wild plants. We could only get from them the stem of the fennel, gathered just as it issues from the ground near the snow-line, and stalks of rhubarb, the acidity of which, however, was very pleasant and refreshing. They had lately killed a bear at this village; the skin measured 6 feet 4 inches from the snout to

the stump of the tail, and the fur was of a dun-grey-colour, whitish beneath. We also saw here horns of the wild goat.

This valley, at an elevation of 6200 feet, was partly cultivated, partly covered with snow, and the remainder overgrown with a rank vegetation, more especially of umbelliferous plants; among which, however, were a few beautiful flowering plants, as crown imperial (Fritillaria imperialis), pæony, and asphodel. The waters of this little alpine valley found their way out by a narrow and deep glen in limestone, and then tumbled along to the valley of the Zab.

Thursday, June 18th.—The ascent to-day was not so steep, and in some parts we could mount our mules. The hills were also now wooded with fine oak; and gaining the next crest (Warandún), we found ourselves immediately above a summer pasture with a large patch of snow, whereon was now encamped Ismael, chief melik of Tiyárí. The descent was steeper than the ascent, and extended about 800 feet. The only tent in the Zómá of Warandún was that of the melik; all the rest were huts made of branches, and there was an aspect of poverty in all things, and nothing plentiful except milk. A few cross-sticks were quickly set up and a carpet spread over them for our accommodation. It was some time before his Majesty the King of Tiyárí made his appearance He at length was seen slipping out of his tent, and encompassing our carpeted mansion. He came as if from an opposite direction, entering with an air half of pleasure, half of surprise. He had evidently been dressing, and was clad in a new cloak of scarlet cloth and wine-coloured inexpressibles. As many as the little tent would hold crowded in, and our position became extremely irksome. King, travellers, soldiers, peasants, muleteers, were all crowded or rather jammed together. It was with difficulty that space was made for a repast of rice and sour milk that had been hospitably prepared for us. The conversation turned chiefly upon mountain-politics, as the Melik's mind was evidently quite absorbed by the appearance of the Turkish troops at 'Amádíyah. He said he was also threatened on the side of Ván. But we afterwards found that he had exaggerated this. He appeared to be well affected towards Ibráhím Páshá, from whom an emissary had lately visited these mountains. He also spoke favourably of the condition of the Christians under the Russian rule. He was not a man whose countenance expressed much firmness or vigour of character. Tall and of spare habit, he appeared to have given himself a good deal up to domestic comforts, and to have foregone the elasticity and energetic movements of the mountaineers, and in point of judgment and intelligence he was far inferior to the patriarch of the Chaldeans.

Similar customs existing among people geographically remote

from one another, independent of their importance in tracing the early distribution of nations, always excite interest, especially if connected with certain physical circumstances. A pleasing reminiscence of other alpine countries was afforded to us here by the general custom of wearing an eaglet's feather in the cap, the son of the Melik being alone distinguished by a dark green cock's feather, such as is worn in Tyrol.*

Leaving the Melik, who expressed himself disappointed by our present, although we thought we had been uncommonly generous, we descended another thousand feet through a thick forest to the valley of Kiyaú, where we pastured the horses while I examined a neighbouring lead-mine. There was, however, only a shaft of a few feet in depth, and that not being at present worked, I could not ascertain the thickness of the vein. It occurs in a slaty yellow limestone belonging to the upper chalk formation. Most of the lead here is gathered from the water-courses in small pebbles, as the tin is in some of the mines of Cornwall, only the fragments are less round.

There are two villages at Kiyaú, the upper one Mohammedan and of tributary Kurds, the lower one Chaldean and with a church.

In the parallel of Kiyaú, or rather a little below it, and at the foot of Warandún, the Zab is divided into two branches of very nearly equal size; the southerly branch comes from the country beyond Júlámerik, the northerly from Leïhún and that quarter. This latter is called Berdizáwí or Little Zab. A huge mountain-mass called Meskannah extends between the two rivers.

After a short ascent over yellow and fissile limestones, we travelled along the banks of the Berdizáwí, sometimes over cliffs of conglomerate which overhang the river, and down which one of the mules had a fall, but was luckily held up by the trees and recovered without any hurt. In little more than an hour we came to a torrent which descended from a lofty and snow-clad chain to the west called Máranán.† It was 13 yards wide by 2 in depth, and crossed by a bridge of interwoven branches as usual. Near the same point was also a bridge over the Berdizáwí, and a little cultivation, but no village.

* The Melik, observing that I had been collecting plants, sent a man who brought me a gorgeous specimen of a scarlet cypripedium, which grew in shady places near the snow-line. My only botanical work (Loudon's Encyclopædia) does not mention a scarlet species of this interesting genus.

† This name is apparently the same as that of the Metropolitan, called by Major Rawlinson (Journal of Royal Geographical Society, vol. x. p. 103) Maranan, evidently meant for Már Hannan, the Metropolitan of Adiabene, who, at the beginning of the ninth century, withdrew a large part of Kurdistán from the ecclesiastical jurisdiction of Ażerbíján, and annexed it to the bishopric of Salak, which, according to Major Rawlinson, was the name applied formerly by the Syrians to the Kurdish mountains between Media and Assyria.

Beyond Máranán river to the N. are two rocky ranges of limestone, which, with the characteristic peculiarity of that rock, tower up in lofty precipices, in this case fronting the W., while the strata dip E. The most easterly and most lofty of these ranges is called Sináber, and beyond it is the upland of Leïhún. We crossed the first and lower range, when a curious arrangement of rock presented itself. The lofty precipices of limestone to the N. and S. fall away to the same point in the E. Starting towards it from nearly equal distances, the cliffs begin to lower and to recede at the same time, till they meet in a point over which the Berdizáwí throws itself with a roaring noise and a cloud of foam and spray. I regret that our road did not conduct me near enough to examine in detail or take measurements of this great waterfall. Turning to the N., the path led along the foot of the cliffs and then up rocks like steps, so that on approaching the crest of the Sináber, I found myself separated from the river by several tiers of rock-terraces, presenting so many inaccessible cliffs.

On the upland of Leïhún we found the Berdizáwí divided into three branches, all which unite shortly before the gap in the rocks. The most westerly is the smallest, being only a few yards in width; the second comes from the N.W., and was 20 yards wide, and very deep, but its channel much filled with boulders; the third came from the N. 30 E., and was 22 yards wide, and from 4 to 6 feet deep. We crossed all these streams on bridges of twigs: they rolled beneath with the noise and rapidity of mountain-torrents.

This upland is inhabited by the Kurdish tribe of Leïhún, under the beg of Júlámerik. Many villages, with much cultivation, are scattered around. We crossed the river, and turned rather to the S.W., to the village of the beg. A short time after our arrival, this worthy governor, a fine but ferocious-looking old man, came to us on the roof of his house, and, without allowing any interruptions, addressed us in pretty nearly the following amiable strain, omitting the salám:—"What do you do here; are you not aware that Franks are not allowed in this country? No dissimulation! I must know who you are, and what is your business. Who brought these people here?" turning round in a haughty, peremptory manner. "I," said one of the Chaldeans, laying his hand upon his breast in an undaunted manner. He turned round again, and said, more deliberately and quietly, "You are the forerunners of those who come to take this country; therefore it is best that we should take first what you have, as you will afterwards take our property;" and he turned to his followers for approbation, which was grinned forth fiercely. Taking advantage of the *hiatus*, Mr. Rassám endeavoured to put in some peaceable sentences, and ultimately got the old man into a better humour.

After a time he got up to go away; then turning towards me, who had been all the time sitting under a tree, where I had gone to take a few notes—an employment I was soon obliged to give up—he said to Mr. Rassám, "You are social; but who is that proud brute in the corner?" I laughed at him, and he walked pompously away. At night the mules were huddled together, and each in his own way prepared against an attempt at robbery, not so much from the old chieftain's braggadocio as from the whisperings and signs we observed going on among his followers; but nothing came of all this noise. The Chaldeans said that if he had robbed us, the Tiyárí, as we were under their protection, would have punished them for it; but I think they did not like the risk that would have attended upon the attempt; for there were five well-armed men in our party, besides five slightly armed.

Friday, June 19th.—From Leïhún the direction of our travels was altered: the same previously-described remarkable peculiarity in the configuration of the country which had so much influence upon its hydrography affected also the lines of communication, and instead of travelling nearly constantly N., we now turned to the eastward, over the upland of Leïhún, and low ranges of hills. The temperature was so low as to feel actually cold; and as we went eastward the river of Leïhún was seen flowing through pastures, as a quiet stream, and no longer a roaring torrent. Far away to the N. was a Christian church, called Már Ghiyórghiyó Karkál, much reverenced by the Chaldeans, as the tomb of a holy person who made many converts; and at the head waters of the river was the snow-clad chain of Pårá 'Ashín, which stretches in front and beneath the loftier Erdísh Tágh. Passing over a range of hills, rising no great height above the upland, we descended to a cultivated vale, with houses and gardens. This place is called Eslayá. The inhabitants are Kurds, but very poor: they said they had not tasted bread for forty days. We certainly could get nothing from them, so we made a breakfast upon a salad of young vine shoots.

Near Eslayá (6258 feet in elevation) we entered upon the first granitic district we had met with in the mountains. These rocks presented the usual large and small-grained varieties of grey and pink colours. They show themselves first on the upland, at an elevation of 6000 feet, but soon rise up 1000 feet above that, in bare, rude masses; and their prolongation apparently forms the Túrá Jellú of the Chaldeans, and Jáwur Tágh of the Persians, the loftiest chain of Kurdistán. In the marshy spots, such as are frequent in granitic countries, there was a brilliant vegetation, more especially of primula auricula, of which the peasants made bouquets to present us with. Caltha palustris, Pinguicula alpina,

Veronica aphylla, Epilobium alpinum, and many saxifrages; euphorbiæ, carices and grasses also abounded.

Another ascent with a snow patch brought us in view of Júlámerik, bearing N. 80 E. The first appearance prepossesses the traveller much in favour of a town so beautifully situate. The castellated part consists of a massive building, the residence of the beg, to the E.; a central square court, with round towers at the angles, and a few stray houses irregularly detached, occupies to the W. the crest of a low cliff, which rises with precipitous sides from out of the collection of mud hovels, about 200 in number, that nearly encircle the castle hill, and constitute the town of Júlámerik. In other respects it is situate in a deep hollow, on the Kurdistán upland, being at an elevation of about 5400 feet, and in a ravine, by which the rivulets of the district—of which there are many—find their way into the Zab, flowing immediately below. To the E. is a bold rocky mountain, called Shembat, which is at least 3000 feet above Júlámerik; and beyond rise the still loftier summits of Jellú or Jáwur Tágh; the highest mountains of this part of Kurdistán, and probably only equalled by the Máranán mountains: the nearest of its summits to Júlámerik is called Galílá. To the S.W. rises a rock of limestone, about 600 feet high, bearing a ruined castle, designated Kal'ah Bawá. Around, and especially to the N. and N.W., is seen cultivation, with a few villages: we descended to one of these, called Merzín, and thence sent off a guide to announce our arrival to Már Shim'ón, and await his disposal of our persons. The patriarch was at that time acting-governor at Júlámerik, or Jemár, as it is called by the Chaldeans, the Kurd beg having gone to Básh Kala'h to meet an envoy from Háfiz Páshá. Had he been at Kóch Hannes we would have waited upon him at once; but we were too well aware of the jealous disposition of the Kurds at Júlámerik to create impediments in our own way, by doing anything that might cause either a feigned or real distrust on the part of the patriarch. Már Shim'ón sent back for answer, as might have been foreseen, that we had better not come into Júlámerik, where all our motions would be watched, and no private conversation could be indulged in; but his brother would receive us at Pagí, an Armenian village, close to the town, and where he would visit us next morning. We were accordingly soon installed in the yard of the Armenian church, from whence, as it came on to rain, we retired to the vestibule, where the people for two days had the extreme satisfaction of worrying us till we had nearly lost all patience. We were never for one moment, night or day, without a number of men around us, whose only amusement was to examine all our things, to pass jests, and fling epithets of scorn upon their visiters. I was not allowed to take any notes, being

carefully watched night and day. We did everything in our power to conciliate these rude people, by rendering them various services, but to no purpose; nevertheless I obtained a few astronomical observations at night, effecting my purpose under pretences which insured me a few minutes' privacy. By two meridian passages of Jupiter and one of the moon, Pagí church is in N. latitude 37° 8′ 53″: its elevation is 4880 feet.

Saturday, June 20th.—Már Shim'ón came to us at five in the morning, and conversation lasted till 1½ P.M., fasting, I suppose, to preserve clearness of understanding. The patriarch, however, told us, by way of apology, that his brother, who had been with us on the previous evening, was not at his own home, but a guest.* Már Shim'ón is in every respect a fine man, in the middle of life, tall, strong, with a capacious forehead and intelligent countenance. He was, however, evidently timid in regard to the Kurds. Our presents, consisting of modest luxuries, scarce in the mountains—such as calico, boots, olives, pipe-tops, frankincense, soap, snuff, &c.—were, to my amusement, displayed in public by Dávud, everybody offering an opinion upon the value of each item. The patriarch's good manners did not prevent his letting us know that a watch would be acceptable.

But, with these trifling exceptions, our conversation was of the most interesting kind, and the patriarch felt and expressed the greatest anxiety to enter into friendly communication with England, and to avail himself of the kind interest felt in the education and moral and religious improvement of his people by many of the inhabitants of Great Britain. At one time he retired to hold a consultation with his brother,. but it was of short duration, and probably related to the feelings with which the Kurds might view such an alliance, but a moment's consideration sufficed to convince them that it was not of a nature to interfere with local political arrangements; and that, at all events, they were always in a condition to assert their own free will, and to maintain their religious and national rights. These subjects having been all discussed at length, Már Shim'ón took his departure for the castle of Jemár, his brother remaining to keep us company.

Sunday, June 21st.—It may be said that the consideration of the moral and religious condition of the Chaldeans only remotely affects the interests of geography: but as the Society has expressed itself in the Instructions as by no means insensible to the importance of this object of our research, I shall here introduce, as

* It is worthy of being recorded as an act of kindness, amid so much rudeness, that next day (Sunday) an early but simple repast was brought us; and all we could learn was that it came from a widow who had lately lost her husband. After our first interview, however, with the patriarch, plenty of provisions were regularly sent us from the castle of Júlámerik.

briefly as possible, a few remarks upon these people, in the hope of drawing attention to what I consider as the leading consideration in all attempts that may be made to ameliorate their condition. Writing to the Royal Geographical Society, I may be allowed to notice a speculation respecting the influence of physical circumstances on man. It has been advanced by the most eminent traveller of the present age, that certain climates, more especially alpine districts, where but a brief interval of sunshine alternates with storms, and where the ruggedness of nature begets sternness and moroseness in mankind, are most favourable to the propagation of a religion of asceticism and monastic seclusion. But here, in the heart of Kurdistán, where snow-clad rocks perpetually frown down upon secluded vales—where giant precipices seem almost to defy mankind to venture upon intercommunication—where waters, instead of meandering through flowery meads, pour in resistless torrents over their stony beds—where clouds, unknown at certain seasons in the plains, almost perpetually obscure the fair face of the heavens or dwell upon the mountain tops—and where the universal aspect of nature is sterile, forbidding, and austere—the benign influence of a kindly religion, and the simple forms of a primitive church, have preserved a people from self-sacrifices, unavailing to God and injurious to society. The Chaldean church neither inculcates seclusion nor celibacy among its clergy; its only purification is fasting, so strongly enjoined all Christians; and, in order that in this point their bishops—whose dignity is hereditary—may be without stain, they are not allowed to partake of flesh-meat either before or after their ordination.

But if the influences of climate and soil, combined with the peculiarities of position with regard to neighbouring races of men, on the moral and intellectual development of the Chaldeans, are modified in one direction by religion, it is much to be regretted that in another they have exercised full sway, allowing the passions too frequently to obtain the ascendant over morality and religion. The hardy mountaineer knows but a single step from the toil of travel, the hunt of the chamois, or a combat with a bear, to an expedition for plunder, or to civil war and extermination.

Thus the character of the Chaldean, besides perhaps retaining the impression of early persecutions, has undoubtedly been affected by position, by the influences of nature, and by the vicinity of warlike and predatory tribes, maintaining hostile creeds, but it is still more influenced by a very simple and easily remediable defect, namely, that with the forms and practice of worship they are not taught to understand the gospel.

In a country where none can read but the priests, it is most

essential that attention should be given to the instruction of the people in the humanizing precepts so characteristic of, and so peculiar to Christianity. It is not the fault of the laity, for they are regular attendants at church, but of the priests solely, who partly chaunt and partly mumble through a liturgy of great beauty and excellence, and through the ennobling lessons of the New Testament, in so unintelligible a manner, that no practical advantages can be derived from them. And it is to be remarked here that the old Chaldean in which the liturgies and Testament are written differs also much from the Chaldean dialect at present used by the mountaineers. Certain prayers are familiar to all, but they have little moral effect. Many persons piously disposed retire to a corner of the church to pray in privacy, and I have often observed that such persons adhere also to the old Oriental practice of frequent prostrations, a form not observed by the clergy: but there is no plain distinct enunciation of the precepts and practice of our Saviour or of his Apostles. There is no sermon or lecture to expound difficulties of doctrine, to awaken reflection, or to sustain faith by convincing the intellect: thus the main body of Chaldeans are only nominal Christians, and must remain so till assistance be sent to them from more favoured nations. Left to themselves and without education the people have deteriorated, and with the carelessness and ignorance of the laity have come laxity and superficiality among the clergy, an attachment to forms with a disregard to substance.

It would be a great injustice, however, to these mountaineers were I not to acknowledge that they are superior in intelligence and in moral worth to the inhabitants (Christian and Mohammedan) of the same classes in Anatolia, in Syria, and Mesopotamia. There are some forms of society and many decencies of life belonging to improved civilisation that are omitted by the mountaineers; but, leaving out exceptions, there is no doubt that they are, as a race, more quick and impressible, more open, candid, sincere and courageous than the inhabitants of the before-mentioned countries. Their bearing is erect, but without the swagger of the Turk; their eye firm, but without ferocity; their forehead ample and high, unclouded by suspicion and evil feelings.

But this slight superiority over neighbouring nations gives them no claim to be looked upon as a people enjoying all the real benefits of the church to which they belong; their general demeanour and tone, their implacability towards their enemies, and many points in the daily conduct of life, are not only not consonant with, but are severely reprobated by, the religion which they profess to follow. The origin of the demoralization and of the

religious and intellectual prostration of this remarkable people was beyond the control of man, and was primarily connected with those many revolutions with which it has pleased the Almighty to visit eastern nations; but the present existence and continuance of this state of things is evidently to be attributed to the want of communication with other nations, and to the neglect of education among the clergy as well as the people; and it is sincerely to be hoped that the same day that these facts shall be clearly felt and fully appreciated, will see commence the future regeneration and humanization of one of the most interesting and most remarkable, yet little known people, that are to be met with on the earth's surface.

It is an agreeable reflection that the power to rectify their error, if any such exist, lies with themselves, and that they are therefore open to the best and surest means of doing good—friendly and brotherly advice, offered by one who never (as an esteemed authority writes) considers those corruptions as heresies which do not actually tend to destroy the Christian faith. The exercise of such liberality is truly labouring not to increase the power of any particular sect, but to unite the Church throughout the world in brotherly love and sound doctrine.

The Patriarch of the East, who in the time of Assemani had twenty-five metropolitans and upwards of 200 bishops, has now only one metropolitan, Andisho Andishíyah, or Ishíyah, metropolitan of Berráwí, and four bishops, viz., Már Yumna, bishop of Gawílen, Már Yusef, bishop of Dahara, Már Iliyás, bishop of Gúj Teppa, Már Gabriel, bishop of Ardishar,—all in Persia. The dignitaries of the Roman Catholic Chaldean church have been already enumerated; it is remarkable that Assemani states that the Patriarch is elected by a council of metropolitans and bishops convened by the sees according to their priority, while Mr. Rassám assures me that the office is hereditary, and so far as succession in one family is concerned, this is also affirmed by Dr. Walsh. It appears that the nephew generally succeeds the uncle.

Monday, June 22nd.—This morning we left Pagí, on our road to Básh Ḳala'h, or the "castle at the head" waters of the Zab. We had a gentle ascent up the shoulder of Ṭúr Burju-llah, which lasted nearly 2 hours, and then descended to the valley, or rather upland, of Ḳóch Hannes, a small village upon a level upland vale, advancing over the valley of the Zab, the residence of Már Shim'ón. A servant came out from the village and brought us presents of flowers and a repast. Some of the Kurds of Júlámerik were in their tents at their summer quarters in this valley, which is watered by a great number of torrents, supplied by the snows of Burju-llah.

We rode some distance along the sides of Kóch Hannes hill, having a higher range, that of 'Areb Tágh, before us. We then descended by a long and steep, though otherwise good, pathway, to a valley in which were many villages and delightful groves, with a varied and abundant vegetation. We then ascended again to a cultivated upland at the foot of 'Areb Tágh, where were the Chaldean villages of Espín and Gharánís, both having towers of defence against the predatory expeditions of the Kurds; and the latter was a good specimen of the poorer class of Chaldean villages—small, but with a bold look; poor, but religious: the inhabitants of five houses had two churches and one fort.

The prospect from Gharánís, where we spent the night at an altitude of 7009 feet, in a temperature of 40·4, or only 8°·4 above freezing point, was very beautiful. The quantity of water poured down by the mountains around is very great: in travelling, scarcely has the din of one torrent begun to diminish when another breaks upon the ear. Cataracts in rivers or rivulets generally display some geological phenomena, such as differences in the structure of the strata, the crossing of a dyke of igneous rock, &c. Here they exhibit the effects of contrasted configuration. Three different torrents poured in lofty falls over the side of Kóch Hannes Mountain, to unite in one stream before reaching the valley of the river of Espín. The outline and forms of the mountains which constituted the lofty chain of Túrá Jellú, or Jáwur Tágh, were never so distinctly seen: I could take bearings to all the chief points, which, if not the highest, are by far the most steep and rugged of the Hakkárí Alps. There are four or five abrupt, truncated, culminating points, between which are ridges of sharp pinnacles, rising like sky-towers, and overlooking deep and precipitous ravines filled with their vast deposit of perpetual snow, the grave of waters gone to rest. The silver crest of the lofty but less serrated peaks of Máranán also extended to the N.W., the sun's setting beams lighting up their long continuous summits like a great icy coronal set upon the sea of silent hills, which filled up the remainder of this beauteous landscape, and which we now felt loath to leave, still more so from the prospect of a burning plain before us; but we remembered that we had still to cross the same chain—still perchance to breathe freely on the summit of the peak of Rowándiz.

Tuesday, June 23rd.—There are two roads from Gharánís, one over the mountains, the other by the valley of the Zab. We took the latter, although the longer, in order to visit some sulphur-mines said to exist there, and to avoid the Artúshí or Ardúshí Kurds, who were not well spoken of.

We made two slight ascents and descents before we came to the sulphur deposit. This we first met with at the bottom of the

valley; it consisted of sulphur mixed with blue lime shales, sometimes granular, but mostly pulverulent. The second deposit was, half a mile beyond, in breccia of blue limestone, between the fragments of which was a small quantity of crystalline sulphur. Neither of these deposits were of much importance, from their extent, but geologically they resembled much what is observed in the plains of Mesopotamia. A warm spring, emitting hydrosulphurous acid, also occurred in the vicinity. We passed the Chaldean village of Kermí, and then turned off from the valley of the Zab, which was here both rocky and beautifully wooded, to the N.E., passing a valley with two more Chaldean villages.

The outline of the mountains had now become less rugged, the uplands were more lofty, and the chains more continuous. We met in our road with a well-armed caravan of mules going to Júlámerik. By the road-side grew large golden poppies; and, where marshy, Britomus umbellatus. In the evening we followed for some time the valley of the Zab, where it winded through a marshy upland vale; at the end of this it received a large tributary, which we crossed by a bridge: it flowed from N. 80° W. Ascending an upland a little above the Zab we reached the Chaldean village of Meïlawa These Chaldeans are subject to Básh Kala'h, and no longer claim the distinction of belonging to a tribe.

The country towards the head waters of the Zab beyond this quite changed its characters. There were still a few mountain points, as Arghí Tágh,* to the S.E., with a bold outlying rock, called the "Rock of Fire." To the N., between Básh Kala'h and Lake Ván, was the Erdísh Tágh; but the outline of the chains is now tame

* This is the Múz Tágh of Colonel Monteith's map; and it appears barely to rise from 1500 to 2000 feet above the valley of the Zab, where the latter is about 6400 feet above the level of the sea; so that the mountain attains an elevation of 8400 feet. Monteith marks 9000 feet; probably from actual observation of a crest E. of that which was visible to me, and which constitutes the summit level between the head waters of the Zab and the upland of Urumíyah. Compared with the observed elevation of Sheikhíwá, I should think Colonel Monteith's observation rather in excess, and it appeared to me that none of the snowy mountains of the districts of Beradúsht, Burdasúr, and Kaniresh, which bound the upland of Urumíyah to the W., attain an elevation exceeding 9000 feet; the mean height of the crest being 8400 feet, or 4000 feet above the plain of Urumíyah. The Túrá Jellú, or Jáwur Tágh, towers over the range considerably, and advances beyond it to the W. But it would be requisite to extend our researches further S., along the Kandilán mountains and Sardúsht country, in order to determine the loftiest summit between the Múz Tágh and the Zagros. I think, however, that there can be no doubt that the peak of Rowándiz has no rival in the easterly chains of Kurdistán, and it is in these that it is situated. Notwithstanding the evidence of Monteith's map, it appears quite certain, from the size of the rivers flowing from this easterly chain to the lake of Urumíyah, more especially the Náz-lú, the Suhúr, and the Burránduz, that they originate in the Túrá Jellú, and flow through this chain; indeed, the transverse valleys of the two last-named rivers are quite evident from the plain, while some large tributaries probably flow from the western side of the Jellú to the Zab, in the interval between the country of the Tobí Chaldeans and the Zibarí Kurds.

and rounded, the ranges being neither serrated nor boldly defined, and rising so little above the level of the upland as to have the appearance rather of hills than mountains. But the generally Alpine character of the whole country was rendered sensible by a variety of prominent features—the bleak and bare aspect of the soil—the little cultivation, and that so tardy—the reluctant vegetation of coarse grasses and sedges—the hardy and ligneous character of the perennial species of plants—and the waters flowing towards the lofty chains to the west—spoke of their altitude in language as strong as the diminished pressure of the atmosphere, whether indicated by the length of a column of mercury or by the low temperature of the boiling point of water. Meïlawa, by the latter indications, was at an elevation of 6418 feet.

Wednesday, June 24th.—Our road still continued up the open valley of the Zab: 2½ hours brought us to where two streams meet; the one from the mountains beyond Básh Kala'h, the other from Kandá Kilissa. We soon came in view of Básh Kala'h, about 2 miles to our left. It is a large village, distributed round the base of a more conical hill than that of Júlámerik, and, like it, supporting a castle. It is said to contain 200 houses, inhabited by Kurds, Jews, and Armenians. It is governed by an officer of the Beg of Júlámerik, and is tributary to the Páshá of Ván.

At one part of the valley of the Zab some rocky ridges of yellow limestone come down close to the river's edge, which they shut up in a narrow glen. There are no less than three different castles, square courts with towers at the angles, commanding this pass. Two are in ruins, but one, Kala'h Karání, is still in good repair. Our guides this morning had been a good deal disturbed by the appearance of six armed Kurds, who followed us for three or four hours, always keeping, however, out of shot. This was an advantageous place for an attack on our small party, for our three Chaldeans had left us at Júlámerik, and been replaced by a peaceful, talkative priest, but nothing was attempted. Keeping still up the valley of the Zab we came to an ancient Armenian monastery, well built, with sloping roof, and bell-towers, containing two bells, regularly rung at service. It is curious that the Armenians, who are dependent, should have preserved this custom, while the Chaldeans, who are independent, have no bells in their churches.

At this point the Zab is divided into two streams, one of which comes from the southern declivities of the Erdísh Tágh, in the district of Albak; the other from Kóniyeh, Karásún, and Kashen, where three different springs are marked in Colonel Monteith's map, evidently from actual recognisance; and the elevation given is 7500 feet—I do not know how determined, but coinciding with what might be expected from the observed elevation of the Zab

in the present upland valley, so near its sources, and where it is a mere brook, 6300 feet at Meïlawa, 6800 feet at Kandá Kilissa. The sources given them by Colonel Monteith are correct, whatever may be the case with the course and tributaries of the river, as delineated in the same map. They rise between the territory of Salamast and Kotúr, in the Sar al Bágh, from the sides of which the waters flow in three opposite directions to the lake of Urumíyah to the Caspian and to the Persian Gulf.

Kandá Kilissa is, as before said, a very old Armenian monastery. It is inhabited by a bishop and priest; the former of whom, an intelligent man, assigned to it an age of 1600 years. The door-way was a handsome specimen of Saracenic architecture, though defaced by a colossal bas-relief of the Almighty, a monstrous production, resembling a great idol. Around the arch were also other figures, with large heads of hair. On the bodies of these were some antique carvings, among which were some letters resembling those which had been identified as Armenian at Al Hadhr. I may mention here, that, with the exception of the Armenian characters, the sculptured signs on the stones of Al Hadhr are correctly rectilinear, and not variously contorted as in the specimens printed by the Society. The church of Kandá is defended by a rampart and bastions, and has two outer courts with defences. On a height above is a modern castle, with a guard of about forty Kurds from Básh Kala'h: for this is the frontier of the country.

Tuesday, June 25th.—This morning we left the valley of the last tributaries to the Zab, and entered upon a hilly country, with occasional ravines in limestone. It was so cold before sunrise that we were glad to walk to keep ourselves warm. In one of these ravines was a block of limestone with a semi-cylindrical hollow, to which is attached a tradition that a prince of Salamast* was formerly converted to Christianity, and was in consequence pursued to the mountains; that he attempted to secrete himself in this hollow, but was slain there by his enemies. This locality of an antique martyrdom was treated with great respect by the Chaldeans in our company, who kissed it and then rubbed themselves in the hollow. The stone is well polished by these absurd observances.

Trachytic rocks and basalts break forth amid these limestone rocks, and constitute a group of hills,—Túrá Kháni Sar, or Akronal, which rise above a fine pasturing valley, with a lake in one part of it, and which was now occupied by an encampment of Persian Kurds. It takes its name from a ruined karavanseraï in

* This is the orthography insisted upon by Mr. Rassám. It is generally written Sel-nas, or Salmas. Major Rawlinson's map, I find, marks it correctly as a district, and not a town, as in all other maps.

the valley. A Kurd joined us from this encampment with his horse and gun, and behaved so outrageously to us, that had he continued till out of sight of his friends, we should certainly have given him a good beating; but he was too wise to expose himself.

We crossed over a ridge of trachytes and descended by Kháni Berín, re-ascending amid hills of conglomerate and igneous rocks, from whence we obtained our first view of the fertile plain of Salamast bearing due magnetic E., with the lake of Urumíyah beyond. There are moments which never slip from a traveller's memory, when, after a long journey on a heated or monotonous plain, a range of mountains with their anticipations of cool waters and refreshing breezes come into sight, or when, fatigued with mountain-toil and travel, a plain, smiling with gardens and villages, and full of promises of delicious repose, presents itself to his delighted vision.

Our descent to the plain from hence occupied us, however, 3 long hours, when we reached some basaltic cliffs, which led directly to the cultivated plain. On one of them were the foundations of a castle constructed of stones of large dimensions: to the S. was also a bold rock of limestone, which protruded out of the plain, bearing the ruins of Karnawí or Marandos castle; and before us rose a small hill, the last of the basaltic knolls, with a small Christian church. Pits were dug in the bed of a river close to us to obtain gravel, which is sifted, and then sprinkled over the land, to adapt it for growing water-melons. Two more hours amid villages and gardens brought us to the Chaldæan village of Khosrowá, the place of Khosroes * (the Khusrue of Monteith's map), where we had an introduction to a relative of Már Shim'ón, and were well received and hospitably entertained.

The district of Salamast is covered with villages, as may be seen by a glance at Colonel Monteith's map, which appears, in what regards this district and that of Urumíyah, to be founded upon actual survey. These numerous villages have, as in many parts of the E., a common market, where is also the residence of the governor, and the whole is inclosed like a fort. This place is designated sometimes Salamast, sometimes Dilmán, but is generally known in ordinary parlance as Shahr, "the town," simply. It is the same with the district of Urumíyah. In all this part of Persia a bad Turkish is the language generally spoken: the better classes alone are acquainted with Persian. The Christians all look to the Russians as their protectors; but the Persians have imbibed a notion that Mohammed 'Alí, or rather Ibráhím Páshá, is destined to be the great bulwark of Islamism, and the conqueror of the Christian foe; and Major Rawlinson also remarks the same thing of Soldúz.

* The Khosroes, or Chosroes, of historians, is Khosraú with the Persians.

Friday, June 26th.—We rode by U'la, where the American missionaries have a school, and Túrmel, to the hills which advance in bold rocks, bearing two castles over the lake of Urumíyah, and which are designated Kará Básh, or Black Head. But they have a culminating point westward, which had still a few patches of snow on its hoary head, and which, rising about a thousand feet above the level of the lake, is called Zendasht Tágh, or Túr Zendasht by the Chaldeans. These hills gave me much hard work, for their structure was very varied; the results, however, may be given in a few words: the fundamental rock was large-grained granular hornblende and feldspar, and the same mineral small grained passing into basalt. This rock became large-grained lamellar as in gneiss, or small-grained schistose as in certain chlorite schists. Superimposed were a breccia of limestone with fragments of hornblende rocks and limestone rocks often saccharoidal. A second series of rocks presented feldspar and black mica, large grained and lamellar, passing into black mica schists, and common mica schists much waved and contorted, and these into clay schists of various colours, red, green, and gray. Associated with these was a third series, consisting of quartz rocks, generally with a waxy lustre, and passing into jade. We crossed this range of hills and stopped in the gardens of the Chaldean village of Gawalán, to the N. of which is a larger Christian village called Jemalawah by the Chaldean residents, but Jelálábád by the Persians.

Saturday, June 27th.—Our road lay along the banks of the lake, but at some distance from the water, and over a dry, gravelly, or sandy plain, covered with a species of ononis and mesembryanthemum, amid which, when the soil was slightly saline, predominated a species of salsola—when very saline, a salicornia—when scarcely at all salt, Nigella damascena, Capparis spinosa and C. ovata. Thus, at an elevation of 4300 feet, we had at once the vegetation of Mesopotamia and of Babylonia, the nigella especially reminding one of Mósul, the mesembryanthema of Hillah, but vegetation was more dense; and the perpetual artemisiæ of the lower plains were a good deal replaced by Astragalus verus and A. tragacanthoides. Amid these were numerous vagabond flowering plants, which did not, however, affect the main features of the vegetation. Springs of water were frequent at the foot of the hills, the waters being generally brackish. They must become so in passing through the lacustrine alluvium; for the formations, at least on the W. side of the lake, are not such as contain saliferous deposits. I have not seen enough yet of the lake of Urumíyah to give an opinion upon the origin of its saltness, but it is evident that it has diminished in size and left behind a considerable lacustrine deposit characterised by its saline plants.

Major Rawlinson is inclined to take an opposite view of the subject, and to consider the lake as encroaching upon the land. This may very well be occasionally the case, as in different seasons of the year when the supplies from the rivers are greater or less, and again at certain times when whole rivers are absorbed in irrigation or are allowed free course to the lake, as is related by Major Rawlinson of the Jaghatú and the Tátáú: but these are accidental phenomena, while the great extent of lacustrine alluvium, which has evidently been deposited by the waters of the lake, leaves no doubt of the general change produced in a great period of time, notwithstanding the irregular temporary variation in the level of the waters.

The district of Urumíyah presents an extraordinary scene to a person accustomed to the treeless monotony of the plains of Mesopotamia; a more fertile district can scarcely be imagined. One vast extent of groves, orchards, vineyards, gardens, rice-grounds, and villages, sometimes with a village common. It much resembled the best part of Lombardy, between Milan and the Lago Maggiore. Five American missionaries, with their wives and families, are now stationed in the town of Urumíyah, where they pursue their benevolent work of educating the young Chaldeans, in a delightful climate abounding in all the luxuries of life. May they long enjoy them and continue their truly useful and valuable labours!

Sunday, June 28th.—Leaving Urumíyah we crossed the river of Suhúr by a bridge of five arches, and crossing a low range of hills entered upon a very fertile low rice country, which extended nearly to the banks of the lake, and to the S. gradually became a marsh, which must be unpassable at certain seasons of the year. We had some difficulty in fording the Burrandúz, also a goodly stream, beyond which we stopped for the night on the marsh near the fortified farm of U'ládí. This plain was everywhere covered with large herds of horses and cattle, and flocks of sheep and goats. There were also many villages, and every appearance of the same prosperity and fertility met with all along the E. side of the same mountains, which on the western side are, generally speaking, so sterile and unproductive.

Monday, June 29th.—Passing the villages of Thomator (christian) and that of Chár, each with its mud fort, we entered upon the hills which now separated us from the plain of Ushneï, or Shino as it is generally called. We entered by a ravine, about 1½ mile up which we found the village of Kasinlí, the hills around rising barely 800 feet above the valley. At mid-day, having travelled 6 hours, we came to an upland of sienitic rocks, having traversed which we descended upon the

plain of Ushneï, and passing the Christian village of Chám, we rode through Ushneï without stopping, and bivouacked in a field beyond the town. The plain of Ushneï is traversed in its centre by the river Gáder, and may be estimated at 8 to 9 miles in length by 2 to 3 in width. It contains eight villages besides the residence of the governor and market-place (Ushneï), and two forts, both near the river. This differs much from the account given by Major Rawlinson, but I think the variance is owing to his having included in his estimate part of the lower valley of the Gáder, which from the direction by which he approached Ushneï may have more the appearance of constituting part of the upper plain. This plain is at an elevation, by boiling-point thermometer, of 4619 feet, which appears from the short course of the Gáder to be correct. Salamast plain, nearly on the same level as the lake, has an elevation of 4379 feet, Gawalán 4563 feet (probably 150 feet too much), Urumíyah 4518 feet, a good approximation, leaving to the lake an approximate elevation of 4300 feet. The mountains of Keli-Shín rise from 1000 to 1500 feet above the plain, or about 6000 feet above the level of the sea; and they presented a nearly continuous extent of snow, descending 500 feet down their eastern declivities to the zone of fennel. The plain itself appears to have been once a lake, which was gradually filled up by deposits of gravel brought down by the Gáder, and which at the upper end of the plain attain a depth of upwards of 100 feet. A mud fort of no great antiquity, 2 miles S. 34 W. of Ushneï, has been raised from its previous insignificance by the learning and research of Major Rawlinson, and proved to be the village of Saraganá, where the army of Narses effected its junction with the Armenian contingent. It derives, however, still more importance from its corroborating the ancient existence of a great thoroughfare across the mountains by Ḥerír, Rowándiz and Sídek.

We suffered some inconvenience from the picturesque red-turbaned Kurds of Ushneï, who held various debates concerning the appropriation of our goods; also from the fears of the more tranquil black-capped gentlemen, who urged us in the strongest manner possible not to venture into the mountains, nor even to sleep outside of the town. Their strong representations, backed by the many private conversations of portions of the crowd, so influenced some of our party that only four remained to breathe fresh air in the fields, the remainder betaking themselves to the town, although we had frequently had throughout our journey (and even the night before) the very same representations made to us, without any other result than leaving me and my servant to sleep alone in the mountains. Finding this want of confidence,

application for a guard was made next day to the governor of Ushneï, which led to much disappointment. Ushneï is, by meridian altitude of Saturn, in N. lat. 36° 55′ 29″.

Wednesday, July 1st.—Waiting for the guard, we did not get off till afternoon, when, fording the Gáder, we passed by Sinkár, and then, instead of proceeding direct to the pass of Keli-Shín, we turned to the W., to the summer quarters of the Serúji Kurds, where our Zerza guards had to transfer us into the hands of the Kurd Beg. By this movement I was deprived of the pleasure of examining an inscription I was most anxious to see, and which I had first heard of from the Roman Catholic Chaldean bishop of Mósul, who is a native of Salamast. My regret has however been lessened by reading Major Rawlinson's account of the same stone and writing, which, if engraved on the compact blue slate or schist of the neighbouring mountains, as appears from that gentleman's description to be the case, must be irrecoverably illegible. It is satisfactorily determined, however, to be a cuneiform inscription. I never heard anything of a second inscription, as mentioned by Major Rawlinson. The *second range*, which overlooks Sídek, is the peak of Rowándiz; and it may have been lost by leaving the great road to ascend that mountain.

Thursday, July 2nd.—We started at an early hour for the ascent of the Keli-Shín, which was performed on foot; but we were delayed by the non-arrival of the Kurds who were to act as guards, and without whom the muleteers would not proceed; when they came up, only two were armed, and these began, in the most haughty and insolent manner, to ask for pipes, which nobody seemed inclined to give them. We then proceeded on our journey, and crossing the first range, gained a country with less snow and more wood, and with many flocks of sheep and goats feeding on the mountain sides. We soon, however, came to another range, with glaciers, the slope of which created some anxiety. We passed three of these, however, in safety; it was more fearful to look at another passing over them than to venture oneself; a single slip would infallibly have hurried a person to a vast depth. When we gained the next crest, the peak of Rowándiz was only distant from us two more summits and crests, and was easily attainable. I had gone behind a rock to take a few bearings without attracting attention, when I heard a quarrel, and upon my return found Rassám and Dávud agitated with alarm. The Kurds had insisted on being paid according to their unlimited demands, and upon the mountain where we were. I was glad of this, as there was now an opportunity of repaying them for their previous insolence, which had indeed been intolerable all the way. They were now alone on the mountain, and the Greek and myself were infinitely better armed than they, and

our arms in better condition, so we told them to go about their business, they should not have a farthing. Mr. Rassám, however, who was for pacific measures, promised one of the guides to pay him at Rowándiz. Finding that they could get nothing from us here the two ruffians went off, which was an agreeable riddance.

We now continued our ascent of the mountain. Vast piles of snow, accumulated by the drift winds to a depth of many hundred feet, were only broken through by bold and sharp rocky pinnacles of grey and green quartz, or broke off abruptly over dark precipices of brown and blue schists, shivering away in silvery leaflets, and shaking in the breeze more like fragments of the iceheap than of the mountain. The Aretia alpina, and here and there a saxifrage, were the only remaining specimens of vegetation; on some sheltered moist spots grew, in one mass, Polytrichum septentrionale. Proceeding over the first mountain, we had a descent to make through a ravine filled with snow, then another ascent steep and rocky, and another glacier, till hope deferred made the heart sick. At length we came to a precipice formed by a vast dyke of sienites, which crossed the whole crest, and constituted the summit of the peak of Rowándiz, or Sheïkhíwá, as it is called by the Kurds. We were now obliged to climb, but perseverance soon brought us to the top, from whence we enjoyed a view of almost all Northern Kurdistán, favoured as we were by an uncommonly clear and fine day; nothing but the haze produced by the intense heat of the plain prevented our seeing Mósul. Indeed it was well that before my departure I had taken several bearings from Mósul to this mountain, for since the great heats have come on it has been no longer visible. It bears from Mósul N. 81°.5 E.; mag. var. 8° W. Its elevation, by boiling-point ther., 10,568 feet. But, although remarkable by its position, there is no doubt that some of the summits of the Jellú mountains, which are peaks rising on a sea of peaks, or mountains superposed on a group of mountains, exceed it in elevation; as also do probably, though to a small extent, the Máranán mountains; indeed, all the loftiest Alps occur towards the heads of the tributaries of the Great Zab, adhering to the narrow line of the granitic axis; and lower towards the head waters of the Little Zab. At the same time I doubt if there are any mountains in Kurdistán which attain an elevation of 15,000 feet, as marked on Colonel Monteith's map; the highest summits of the Jellú or Jáwur Tágh, viewed in comparison with Sheïkhíwá, not appearing to attain a greater elevation than 12,000 or 13,000 feet.

On looking around I was particularly delighted by the number of old friends which I could distinguish; first, and most promi-

nent, were the Jellú mountains, from which I was separated by what might truly be called a tremendous country of awful chasms and steep precipices; although, when one comes to face these difficulties, such a pigmy is man compared with surrounding nature, that they are merely steep slopes which he may tread, just as an ant finds a firm hold upon what to us appears the smooth surface of a stone. The southerly peak of Jellú evidently surpassed the peak of Rowándiz in height. Advancing from the Jellú upon the valley of the Zab, which here and there displayed itself, glittering out from the wooded vale below like a minute silver thread, was the bold but less lofty mountain of Linitka: beyond was the chain of Matíneh; and nearer, that of Ghara Tóbí and Rash Kaïm, which terminated with their rugged summits the prospect to the N.W. It is the abrupt termination of these chains, and the opening that extends between them and the Zobár country and mountains, which allows of the Sheikhíwá being seen from Mósul. To the W. was first the bold and wooded mountain of Sar-i-Burd, with the beauteous vale of Sídaká, or Sídek, at its base; and beyond this the giant precipices of limestone which guard Rowándiz, and which open their rocky breast to allow the waters of four rivers to mingle together. To the S.W. the country was lower, yet I recognised some well-known points near Kói Sanják; while the lofty summits of the Kandilán mountains limited the prospect to the S. To the E. was the noble expanse of lake Urumíyah, and the comparatively low country of Lahijan and Soldúz, backed by the hills of Sardúsht and Mikrí, and extending in the E. till lost in the haze of a midday sun. I omitted to mention, although I had previously noticed it from the Keli-Shín, that the river Gáder forms three small lakes before losing itself in the lake of Urumíyah. But, as these lakes were not noticed by Major Rawlinson, it may be inferred that they are only temporary.

It was with regret that we tore ourselves from this magnificent prospect; added to which, the mountain itself had a charm which was deeply felt by all. It perhaps more particularly originated in the deep silence which reigned upon this lofty summit, and which appeared as if for ever unbroken on the spot which thus rose up to the region of the clouds so perfectly alone, so pure in its canopy of white, and with an atmosphere so substantially deep and blue that it seemed a cloud of itself; and the spectator shuddered to think himself upon its bosom!

It has been truly remarked that

> "Not vainly did the early Persian make
> His altar the high places and the peak
> Of earth-o'ergazing mountains."

Coleridge, if I may be allowed one more quotation from a

remembrance of home, beautifully expresses the sentiment awakened by such situations :—

> " O dread and silent mount! I gazed upon thee,
> Till thou, still present to the bodily sense,
> Didst vanish from my thought; entranced in prayer
> I worshipped the Invisible alone."*

After half-running, half-sliding, we found ourselves in an hour comfortably seated just below the inferior limits of snow, where a fire had been kindled, and breakfast was prepared to reward us for our toil. There were also a host of Kurdish shepherds who had gathered round to wonder who were the madmen—for they were polite enough to deem us such—who had come to run, as if in derision, over their snow-clad mountains.

A large caravan passed along the road in the course of the morning, and indeed, notwithstanding the bad habits of the Kurds, this is in summer-time one of the most frequented passes in this part of the country, the same merchants having recourse in severer seasons to the road by Rowándiz to Só-új Bolák; but in winter all roads are equally impassable. The elevation of our halting-place was 8568 feet.

On leaving this, we kept rounding the declivities of the mountain, which presented diallage rocks, talc schists, red and brown schists, and conglomerates. The first rivulet we met with came from a small lake at the south-west side of the mountain, which has apparently, but a few years ago, broken its boundaries, and scattered over the valley a vast accumulation of rocks, boulders, and pebbles. We next passed a torrent 12 feet by 2 in depth, a little further one of 11 feet by 1½, and then another 14 feet by 1½. All these large streams flow from only one side of the mountain, and unite in a wooded vale below, where is the village of Berkammá. We continued to descend rapidly till we reached the

* If Major Rawlinson be correct in supposing that the mountain of Asnavend, which bore one of the three original sacred fires—that of Azer-Geshesp—was at or near the famous Keli-Shín, this high and remarkable mountain was the most likely to be chosen as the site of the temple; but it may be objected both to the Sheïkhíwá and to the Keli-Shín, that they are rendered almost inaccessible by snow and glaciers, and I am much more inclined to seek for the site of Asnavend at the peak of Atash Tágh, or fire-rock, before noticed, and which is a commanding yet accessible eminence, and better adapted to the description given in the Zend-Avesta (tom. iii. pp. 22—328), where Mount Asnavend is mentioned as between Var Khosraú, or lake of Ván, and Var Tekhesht, or lake of Urumíyah: the Atash Tágh, near Arghí, or Arja, which was also by name and by tradition the seat of a fire-temple, and answers best to the geographical position given in Anquetil de Perron's Zend-Avesta, being 18 hours from either lake. Major Rawlinson's argument is mainly founded upon the possible derivation of the word Asnavend from Ushnei—the O'shnoh or Ashnokh of the Syrians. The position of the mountain of Asnavend does not affect the discussion of the same traveller regarding the original seat of worship at Shíz—the Atropatenian Ecbatana—for it was after the defeat of Azdewjar (Astyages) by Kei Khosraú (Cyrus) that the fire was taken to the mount. The peak of Zendasht, or lake Urumíyah, may also be noticed as a mountain remarkable in position, and to which tradition has attached a fire-temple.

region of oak, jasmine, small honeysuckle (Lonicera alpigena), acacia, and Cercis siliquastrum. Our descent, however, continued 5 hours from the halting-place, at a fair pace. When we gained the valley of Sídaká or Sídek, we rested at the village of Jeffúlí, at an altitude of only 3742 feet, so that, without crossing any intervening ranges, we had descended directly from the peak of Rowándiz to a considerably lower level than the plains of Azerbíján and the lake of Urumíyah. The change in the temperature and vegetation was, as may be imagined, very great. We were in the midst of rice and melon cultivation, and surrounded by groves of mulberry. Several little villages were scattered along the side of the river of Sídaká, or upon the declivities of the hills. The valley is, strictly speaking, a ravine at the base of the Sheïkhtawí; it and the surrounding country still remain under the government of the Beg of Rowándiz. The tribe dwelling in this vale called themselves Pír 'Astíní.

Thursday, July 2nd.—We continued our road along the valley of Sídaká, as it is called by the Kurds, and by the Persians Sídek. We passed a river from the S.E., 10 yards wide by 1 in depth, and crossed it by a bridge; immediately beyond which was a brook and ravine, and this latter isolates a bold projection of rock, which is washed on the opposite side by the river of Sídaká and the last-mentioned river united. On this projection is the fort of Sídaká, a square court with four round towers at the angles; but having also in front another curtain and gateway defended by two more towers. Before the castle is the village, which contains about 100 houses. Although the present castle is a comparatively modern building, the rock on which it stands appears to have been chiselled on its face at a very remote date, for the waters have since that period wrought changes which are easily distinguishable from what was done in ancient times to render the rock more difficult of approach. There is every reason to believe, from the peculiarities of its position as well as from its antique appearance, that it was a station or fort at the time when this was the great road from Nineveh to Ecbatana. A wooded open valley unites with the Sídek vale from the S.E., and the united waters flow into the comparatively open country between Sar Linitka and Sari-Burd. I had but a short time allowed me for the examination of this curious place, and search for inscriptions, which, as I chiefly sought them on the face of the rock, I may probably have overlooked, if they be upon a pillar, as mentioned by Major Rawlinson's informant. The soldiers came out of the castle, insisting upon an examination of our papers and baggage, as this was the Rowándiz custom-house. At last I was obliged to yield to the general desire to hasten on.

Immediately beyond Sídaká we commenced the ascent of the

Sari-Burd, a mountain of brown, blue, and green schists, and covered with oaks, including a large proportion of valonía. This country, as far as to the mountains W. of Rowándiz and to the Zobár due W., is but a continuation of the 'Amádíyah district, and, like it, is the true district of valonía and gall-nuts. We were 5 hours accomplishing nearly the semicircuit of Sari-Burd, which we had to do to gain the valley of Rowándiz, where it is washed by the river of Sídaká, which falls into the river of Rowándiz (Rúbári Rowándiz) a little below the town, and on the E. side of the limestone range, incorrectly called by Dr. Ross Beni Hindevín. In these mountains there are people of four nations and four languages, viz., Kurds, Chaldeans, Turks, and Persians. Major Rawlinson, being conversant with the Persian language and travelling only in Persian Kurdistán, has uniformly adopted Persian names, as Sídek for Sídaká, Ushneï for Shino, &c. A mountain, in Kurdish Chá, in Turkish Ṭágh, in Chaldean Ṭúr, in Persian Sar, varies in its other names also, according to the language of those whom you address. I invariably adhered to the names used by the Kurd shepherds when I could obtain them; but Dr. Ross, though an observing traveller and a good Orientalist, has been evidently imposed upon by his Arab companion Sayyed Hindí, who has furnished him with Arabic names, as Beni Hindevín, Beni Karak, Beni Havírah, &c., the sons of Hindevin, &c., which have no existence in these mountains. Indeed I have found from long experience, that the best guides and attendants, when fatigued by travel, will sometimes coin a name merely to save the trouble of inquiry.

The latter part of the descent of the Sari-Burd for 2½ miles is carried along a shelving declivity of schists, and cannot be ridden over on mules. I need not add that it is quite impracticable for artillery, and constitutes the second of the difficulties of this road, which are three in number, viz., the snows of the pass of Keli-Shín, the descent on slates at the foot of the Sari-Burd, and the vast limestone precipices W. of Rowándiz. I here became acquainted with a fact of the utmost interest to me, although my space will not allow me to enter into the details of the inquiry. All along the valley of Rowándiz and at the western foot of the Sari-Burd, tertiary brown sandstone, with ostracites and sandstone conglomerates of the same period and unaltered, underlie the schists of Sari-Burd, which exactly resemble in mineralogical characters those of the peak of Rowándiz and of the Ḳárasí Tiyárí. I had long suspected, from a variety of circumstances, that these schists were merely altered tertiary rocks, but I was not prepared to affirm so bold a conclusion, till the evidence thus presented left no doubt in my mind, and I have brought away with me specimens illustrative of the changes by which a common coarse

brown sandstone becomes a beautiful schistose rock. We halted a short time at the Christian village of Dyana, and then rode along the plain to Rowándiz.

I was prepared to meet with much to interest me in the position of this town; but the reality exceeded my expectations. We were almost at its portals before it became visible; but it was easy to see, from the distribution of the numerous ravines, with their perpendicular walls of limestone rock, whereabouts the town would be. At length, coming over a gentle hill, we saw a mount with one of the usual square castles with round towers upon its summit; but this was not yet Rowándiz. We travelled on, and tower after tower displayed itself in succession, till, upon a naked plain of limestone, higher up, a few gardens made their appearance, and at length the town itself burst upon our view: the houses, built in rows, one above the other, and descending in successive tiers, along a tongue of limestone, which has a deep ravine to the E., and another to the N., the latter containing the river of Rowándiz. We descended into the ravine, and found a bridge thrown across the precipice where the river is only 10 yards wide and about 1 yard deep, and rolling about 20 feet below us.

The town of Rowándiz has been estimated at 2000 houses, but I could not count more than 1000. As I may, however, have left some out, let it be allowed altogether 1300; but most of them contain from two to three families, none so few as one, and many more. Indeed I never saw such a crowded population, nor so strange a scene: the roofs of the houses have no walls as in other eastern towns, and the moment the sun sets the dinner is taken, and the bed made upon the roof; for the pent-up valleys of Rowándiz and 'Amádíyah are more oppressive even than the plains of Mesopotamia. There were more than 500 persons to see us eat; and so great was the population that at night I observed there was not room enough on the roofs, and that hundreds of people, men, women, and children, lay in the streets. Many had entwined a few branches round their couches; some had erected little scaffoldings of wood and branches, on which slept the family, dogs, and fowls. The only symptom of modesty exhibited was a great outcry amongst the fair sex that Mr. Rassám wore spectacles to gratify an improper curiosity, and he was obliged to take them off. Altogether there was less refinement here than I have yet witnessed in the East. The town is defended on the land side by a wall with round towers; and the Beg has several guns. There were also several round towers outside the town: on the opposite side of the E. ravine there are two; between the castle, to the N., and the ravine of the river, there are two more, and two in advance of the walls on the land side.

There is also a larger tower in the town on the higher part of the rock. The Beg has as usual the best house, and a very pleasant summer-house, covered with branches of trees, where he spent the day while we were there. The present Beg is brother to the late chieftain, celebrated for his extreme ambition, and whose fate is somewhat involved in oriental mystery. It is well known that he was allured and not beaten from his fastness; for 'Alí Páshá only brought his guns to the hills of Herír, which, as far as regards the difficulties of the country, was no nearer than Baghdád. The Beg went to Constantinople to plead his cause, and certain of the foreign embassies interested themselves in his fate, although he appears to have been a sad lawless mountain-bandit. However he was re-appointed, with the title of Mohammed Páshá, after swearing allegiance to the Porte, and was shipped off to Samsún, but disappeared at Amasiyeh, owing to illness, it was studiously reported; but from inquiries we made at Amasiyeh itself, a few years back, we learned that he was there overtaken by a messenger from Constantinople with the bow-string. The people still asked us about their old chief, whom they looked upon as a sort of Tamerlane.

Dr. Ross, and, on his authority, Major Rawlinson, have written of the river of Rowándiz as if it were identical with the Great Zab, which is not the case, as the river of Rowándiz comes from the W. slope of the Kandilán mountains; and up its fine and open valley is the road to Só-új Boláḳ: near Rowándiz it enters into a ravine of limestone, and receives at the town a stream from the S. The beds of limestone dip at an angle of 10° to the E., or towards the waters; and thus the ravine keeps increasing in height to the W. Not far below the Rowándiz is a gap in these cliffs to the S., through which flow the winter-torrents from a high mountain, towering over these ravines, and called Sar Ḥasan Beg. Further on, and about 1 mile below Rowándiz, the river of that town is joined by a much larger stream, formed by the union of the three great streams described above, with many minor ones, which flow from the Sheïkhíwá and the river of Sídaká. The united streams then flow onwards, till about 1½ mile further they receive another river from the S.W.—a river which presents the very great peculiarity of having its origin outside of or to the W. of the limestone chain of Sar Ḥasan Beg, which it enters from the W., passing through deep ravines and secluded dells till it falls into the river of Rowándiz, to flow out of the same mountains back again to the W.; and very little beyond this junction, the united streams of Sídaká, Rowándiz, and the last-mentioned stream, flow into the Great Zab. The union occurs amid stupendous precipices of limestone, which rise per-

pendicularly upwards of 1000 feet above the pigmy torrents, though these must have been the main instruments of this singular configuration and distribution of rock and water.

Friday, July 3rd.—We did not leave Rowándiz till mid-day. There was much commercial activity in the khán. They were loading two caravans at the moment with madder-root, tobacco, and buffalo-skins. The merchants of Móṣul bring there English and French goods to exchange for galls. I saw the skins of two Kurd foxes, evidently a peculiar species (canis alopex?), very small, with no brush to the tail; the fur fine and short, of an ash-grey colour, except the mesial line of the back, which was brown; the ears were short. Passing the gardens of the town, we made a descent into a deep valley with a gap through the lime-ridge into the bed of the Rowándiz River; we then ascended 1½ hour to the crest of the shoulder of Sar Haṣán Beg, from whence the Great Zab bore N. 48 W., and Sheikhíwá N. 78 E. The rocks of the Great Zab had become nearly horizontal, but soon afterwards were waved and contorted. It took us exactly 1½ hour to descend the precipice which now separated us from the river. The road winds down the perpendicular face of the rock so gradually that it may be ridden on most of its length. We went fast, for we were thirsty, and the windings must have been 6 or 7 miles in length.

Having gained the bottom, the road does not follow the valley or ravine of the Zab, but of the river of Pír Ḥaṣan, which flows into it. The elevation of the cliff measured trigonometrically was 1100 feet, or 1125 feet to a jutting crag. I had been informed by Dr. Ross of a castle in this pass, called Rúm Ḳal'ah, but I saw nothing but curiously-shaped rocks, which might easily obtain that name; there were also many spacious caves in these cliffs. The rivers abounded in fish; and our road up the glen of the Pír Ḥaṣan river had many charms. In the first place the steep precipices shaded us from the hot beams of the sun; there was plenty of water, and the wooded cliffs presented great variety of scene: in some parts vast slips had taken place, and huge masses of rock for a time hid the river from sight; then we came upon a little open space with a base of sand or gravel, while at other times the road was carried with difficulty under overhanging cliffs. At length we came to the open plain, where the limestone rocks at the outskirts of the range were nearly vertical, while within they became almost immediately horizontal, an arrangement not so readily accounted for by the hypothesis of upheaving forces, as by that of subsidence. We bivouacked on the banks of the river, and near the village of Pír Ḥaṣan.

Saturday, July 4th.—We had now entered upon an uninteresting country—the sun-burnt plains and undulating district which

extends between the outlying low ranges of hills of the Kurdistán mountains. First on our road were the hills of Koniatman, clad with oaks, among which appeared a modern square castle called Kala'h Kín by my informants, and Kala'h Júlámerik by the muleteers, who were from Rowándiz. These hills led us to the plain of Herír, beyond which is the rocky range of limestone called Gharah Surgh. Passing by Anomá, a large village, we came to the banks of the Zab, where is a ferry and two villages, the one on the left bank being called Kasrokí, that on the right Kendil. The ferry, however, had been removed lower down, and when we reached it, as there was only a very small raft supported by eight skins, it took us three journeys of 1 hour each to carry over everything: there was no tree nigh to shelter us from the sun.

Much allusion has been made to the comparative size of the Great Zab and of the Tigris at Mósul,—and this is not surprising, since they are so nearly equal in magnitude that sometimes the one has the superiority, sometimes the other. I have collected a variety of data upon the subject, and the result is that at Nimrúd, at the ferry to Arbíl, and at Herír, the Zab varies from 150 to 200 yards in width, while the Tigris, seldom less than 200 yards, expands occasionally to 300 and even 400 yards, as at Yarumjah. In fact the Tigris varies very much, so that at the time of flood it presents the appearance given to it in Col. Monteith's map, which represents it as formed at Mósul of many branches. At these seasons it attains in some places a width of from 800 to 1000 yards, and is a truly splendid sheet of water. But the Zab is always much deeper; and it is probably on this account that it is so celebrated for the quantity and size of its fish. It contained when we saw it a larger body of water than the Tigris, whose tributaries are not supplied by so many snow-mountains as those of the Zab. Indeed the main branch, or that of Arghana M'aden, comes from mountains (Azarah) where there is no snow at this season of the year. The temperature of the waters of the Zab is also several degrees lower than that of the waters of the Tigris throughout summer, and they are consequently delicious to drink.*

A little beyond the ferry we entered upon a country of sands and sandstone, with the usual rivulets clad with gaudy oleanders. There are many villages on the banks of the Zab, which is driven by the Gharah Surgh further N. than is marked on the maps. We stopped at one of these villages, called Isá, by the side of a clear

* I have since learned that the Great Zab is considered as uncommonly high this season, and has thus interfered with the caravans of camels, which can generally ford it by the end of July. Still as the seasons of the floods of the Tigris are in April and May, and those of the Zab in June and early in July, the superiority passes in succession from the one to the other. When at their lowest, probably, the Tigris has a slight pre-eminence.

spring, having a temperature of 69° Fahr.; the air being 110° Fahr. after sunset. We suffered much this night from hot blasts, which came from the plains of Mesopotamia, and kept the thermometer at 110° during the night. It was impossible to sleep under such circumstances; but the result was beneficial, and next day the atmosphere was generally cooled and more agreeable.

Sunday, July 5th.—The main part of the morning's journey was directed up the valley of the Aḳra' River, which is a tributary to the Zab, and not to the Khazír, as marked in Dr. Ross's map. About 8 miles from the Zab there are two streams; one from N. 50 W., finds its way by a ravine through the limestone range that flanks the low country, and is here called Sir-i-Sadah; the other from Aḳra'. This valley and the plain of Nav-Kúr (the Plain of Mud) produce the greater part of the rice consumed at Móṣul, as well as many common and water melons.* We left the valley by a hill called Sar Deríyeh, of no great height, but commanding a most extensive prospect, and from whence I got bearings of all the various outlets of waters from the mountains, with also the inlet of Pír Ḥaṣán, the only case of the kind that I know in the Kurdistán hills.

Below this hill we entered upon the extensive plain of Nav-Kúr, studded with villages, but only very partially cultivated; yet more so than in its northern portion, where we had crossed it on our departure. The river Khazír flows through its centre, but afterwards approaches closely to the foot of Jebel Maḳlúb, which it washes at its south-eastern base. We travelled on till dark, and then took up our quarters in the village of Chorek.

Monday, July 6th.—The Jebel Maḳlúb is prolonged to the S.E. by low hills of sandstone, on the side of which is the large village of Zenganah. The Khazír forces its way through these hills at the foot of Maḳlúb, but is again turned off by the hill indifferently named 'Aïn al Ṣafrá, the yellow spring, or 'Aïn al Beïḍhá, the white spring—from two springs on it so called which irrigate the lands of the village of Bertulli and others. The 'Aïn al Ṣafrá and Maḳlúb appear from Móṣul as two distinct hills, but they are united by a low range of sandstone and limestone, amid which is the village and khán of Duberdaḥ. We took breakfast at this place, and trotted from thence to Móṣul in four hours, the distance being about 18 British miles.

It now only remains for me to conclude with those remarks which, as results of observations made throughout the journey and not of any single observation, could not well find a place in the narrative.

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* The best and largest water-melons are produced by the Khozar.

1st. I have omitted the detail of the geological structure of the mountains, as occupying too much space, but I have endeavoured to express in a brief manner all the leading facts of that structure in the sections which I have drawn up for the Society, and which will be also an answer to the instructions regarding the search for coal, which search proved in every respect unsatisfactory; while my journey to Ur (Kal'ah Sherḳát) will inform the Society of the extensive forests occurring on the banks of the Tigris N. of that remarkable site.

2ndly. It is well known that the determination of the line of perpetual congelation is attended with many difficulties. This limit is much affected by the continuity of mountain-chains, and thus we have reason to expect that it will be lower in Kurdistán even in more southerly parallels than in Mount Ararat, a comparatively isolated mountain, and where it is placed by Parrot at upwards of 13,000 feet. This is confirmed by the observation on Sheïkhíwá, the summit of which is covered by a dome of more or less perpetual snow at little more than 10,000 feet. The Máranán hills present also at a similar height domes of perpetual snow, of which parts always remain, while the craggy summits of the Jellú mountains, which rise above the same line, are so steep as to present only bare and naked rocks.

The aspect of the mountain does not affect in Kurdistán the distribution of snow so much as local configuration, and hence it is of the highest importance to distinguish snow-drifts on hill sides, and accumulations in ravines and sheltered glens, from the other indications; on a general observation, the snow lasts longer and descends lower on the eastern side of Kurdistán than on the W. This is more particularly seen on the Burdasúr mountains W. of Urumíyah, and in the Keli-Shín W. of Ushneï. There can be no doubt of this fact, which is perhaps to be attributed to the higher temperature of the winds blowing from the valley of the Tigris and the plains of Mesopotamia than that of the wind from the uplands of Persia. All patches of snow not continuous are formed by drifts, which last a long time, in consequence of the quantity of snow accumulated in them. These snow-patches extended in July as low as 6000 feet; but when protected by ravines, and in continuous mountain districts, to 5500 or even 5000 feet. When these snow-patches occur in Alpine ravines at great heights, and remain there all the year round, they still do not indicate the line of perpetual snow; such are met with in Kurdistán at an elevation of 9000 feet. As a general result it may be said that there is no chain of mountains in the Hakkárí country which can be said to attain the line of perpetual congelation, although the summits of Túrá Jellú, of Sheïkhíwá, and of Máranán, approach very closely to it.

3rdly. During the present journey great care was taken to obtain the temperature of springs at different elevations, and more particularly of those which might be supposed to come as nearly as possible from the line of constant temperature or isothermal line, which Kupffer (Poggendorf's Annalen, 1829) has placed in those parallels at a depth of 25 metres, and which in the cellars of the observatory at Paris, are known to be at a depth of from 60 to 70 or 80 feet. The complete discussion of the observations collected on the present occasion would carry me far beyond the limits suitable to a memoir. Suffice it to say that the diminution of temperature observed at various elevations did not exceed 1° of the centigrade thermometer (which I always used) for 600 feet (1° Fahr. for 333 feet), whereas De Saussure gives for the Alps in summer 1° for 528 feet; Ramond, for the Pyrenees, 1° for 538 feet; Humboldt, for the Andes, in equin. zone, 1° for 187 metres (which is what Gay Lussac obtained in his aeronautical journey); and in temp. zone, 1° for 174 metres. Kupffer, on Al Búrúz (Caucasus) found a diminution of 1° of Reaumur for every 740 feet, which comes nearest to what is experienced in Kurdistán. At an elevation exceeding 5000 feet the diminution of constant temperature, as indicated by springs, grew more rapid, amounting to 1° for every 550 feet. The thermometer in the atmosphere gave nearly a similar result, but with currents of air from glaciers this could not be depended upon.

4thly and lastly. With respect to zones of vegetation, too interesting a subject to be neglected in twice crossing so remarkable a range of mountains, we observed one great peculiarity, which is the absence of the coniferæ—indeed I did not meet with a single fir, pine, or laurel in the whole range of our travels: myrtle is also wanting. The zones of vegetation were as follows:—

1. From the plains of Mesopotamia to the height of 1000 feet is the zone [illegible] Glycyrrhiza, Robinia, Nigella damascena, wild vine, pistachio, oleander, roses, plane tree, Syringa argentea. Country of rice, grapes, melons, maize, &c.

2. From 1000 to 4000 feet—zone of oaks, Quercus valonía, Q. infectoria, &c. This is the country of pears, apples, plums, &c.

3. From 4000 to 5000 feet—zone of Lonicera alpigena, jasmine, Amygdalus nana, Astragalus verus.

4. From 5000 to 7000 feet—zone of Astragalus tragacanthus, Rhamnus saxatilis, pæony, fennel, Primula auricula, Helleborus hyemalis, Crocus alpestris.

5. From 7000 to 9000 feet—zone of saxifrages, Alchemilla alpina, Gentiana asclepiades, Veronica aphylla, and saxatilis, Polytrichum septentrionale.

In conclusion I may observe, that however gratifying it may be

to my feelings as well as to those of my fellow-traveller Mr. Rassám, to have assisted in restoring a Christian nation to the notice of the civilised world, I am yet fully aware of the imperfection of our labours. Much remains to be done before the curiosity at present awakened respecting the geography, natural history, and antiquities of Kurdistán can be thoroughly satisfied. Some time must elapse and many efforts must be made before all the recesses of those wild mountains can be fully explored: but that they are accessible to an inquirer using proper caution has been proved by this journey, which it is hoped may thereby give a fresh impulse to discovery.

III.—*Sketch of the Eastern Coast of Central America, compiled from Notes of* Captain Richard Owen *and the Officers of Her Majesty's Ship Thunder, and Schooner Lark.* By Captain Bird Allen, R.N.

The best existing charts of the coasts of Honduras and Yucatán being extremely defective and quite inadequate to the growing commercial intercourse between England and the independent States of Central America, the British Government directed a minute examination to be made of the whole of this eastern coast and the adjacent islands and banks, a brief account of which is contained in the following pages.

From Cape Catoche, the north-eastern point of Yucatán, the survey was prosecuted in a southerly direction for 370 miles along the eastern shore of this peninsula, including the shores of Spanish Yucatán and the British settlement of Honduras; then in an easterly direction 350 miles to Cape Gracias á Dios, comprising part of the coasts of Guatemala and Mosquitía; and lastly, again to the S. for 250 miles to the river Colorado, in lat. 10° 47′ N., long. 83° 35′ W being the remainder of the coast of Mosquitía, and 45 miles of the coast of Central America.

The latitudes and longitudes were, when practicable, observed on shore, the former generally by meridian altitudes of stars N. and S. of the zenith, and the latter by chronometric observations. The chain of connexion between the West Indies and England is subjoined from Captain Owen's nautical memoir descriptive of the survey.

"We were furnished with eight excellent chronometers, the Standard (No. 114, by Dent) being the watch that gained the first prize in 1829 at the Royal Observatory, Greenwich, and was the best watch that at that time had been placed there for trial.

"After rating the chronometers at Portsmouth, we made the best of our way to Madeira, and after an interval of 14 days again rated at Funchal. This meridian distance, agreeing exactly with that derived by Dr. Tiarks from a mean of 15 chronometers, may be considered accurately determined.

"Upon leaving Madeira we proceeded direct to Nassau, in New Providence, Bahamas, where we again rated; but as there was an interval of 40 days, the result can only be taken as an approximation to be corrected on our return to England.

"The next place visited was Port Royal, Jamaica, the interval only 8 days, when the results were most satisfactory, and were subsequently verified; all the other positions were measured from one of these two places.

"When we were returning to England in the *Blossom* in 1832, we sailed from Nassau direct to New York, where we remained to rate the chronometers, the interval from Nassau being 11 days; we then proceeded to Halifax, and after an interval of 7 days again rated.

"From Halifax we came direct to Portsmouth; the interval between the observations was only 19 days, and the mean result gave an error *minus* in the longitude of Portsmouth of 12·6 seconds of time, or 3 miles 9 seconds of longitude, which was added to all the West India longitudes under the supposition that this error had obtained in the run between Madeira and Nassau, as from our subsequent observations we have reason to believe was the case.

"The *Thunder* was commissioned in 1833 to continue the survey commenced in the *Blossom*. To avoid the hurricane season we went from Madeira to Demerara, in 32 days; the results were most satisfactory; neither the temperature during the voyage nor rates obtained at each place altering much.

"From Demerara we measured to Port d'Espagne, Trinidad, having a short run of 5 days; and after remaining there to rate, we proceeded direct to Port Royal, Jamaica; here, after again rating, we found the longitude thus brought on from Madeira, *viâ* Demerara and Trinidad, to differ only 1·2 second of time, or less than $\frac{1}{3}$ of a mile of longitude, from that deduced from our run by New York and Halifax to Portsmouth.

"Havanna was measured both from Nassau and Jamaica more than once, and the result does not differ more than $\frac{1}{3}$ of a mile from that assigned to it by the Spanish astronomer Bauzá, being the mean of various astronomical observations."

The longitude of the Spanish main was connected both with Jamaica and Havanna twice or thrice, and with different parts of the line, as Cape Catoche, Belize, Nicaragua, and Old Providence.

Being only a nautical survey, the geographical information

obtained will necessarily be very superficial, little more than the general appearance of the shores and places visited.

The survey commenced at the N.E. part of Yucatán, near Cape Catoche, to which point different authorities assign positions varying 8 miles from each other; as a succession of narrow islets bounds the neighbouring shore, shielding the main from view, the navigator is likely to give the name to what appears to him the most prominent point, while the geographer would hardly consider as his cape anything not connected with *terra firma*.

Captain Richard Owen, following the older authorities, as Don Thomas Lopez and Don Juan de la Cruz, in their chart published at Madrid in 1755, has assigned the name to the N.E. point of the main land,* which is sufficiently conspicuous; the tops of the trees with which the surface is covered being about 150 feet above the level of the sea. Near the shore there is a turreted stone building; whether built for defence or religious purposes we could not ascertain.

Captain Barnett on the other hand has given the name to the most northern point of the islet that bounds the coast.

From this point the main land, which presents a low and level appearance, thickly wooded, the trees rising to a height of about 100 feet, trends to the S.E., and, being bounded by a succession of narrow woody islets, cannot be approached in a ship: the most distant of these islets is Contoy, lying 16 miles from the main, forming the turning-point for vessels bound from the Bay of Honduras into the Gulf of Mexico.

Four miles S.W. from the S. part of Contoy is seen the northern point of a narrow neck of land, composed of white sand-hills, clothed here and there with low stunted bushes, rising to an elevation of 20 feet, which extends in a southerly direction about 6 miles, where it becomes connected with the main by a low sand-ridge. This in some authorities is improperly laid down as the island Blanquilla.

South of this are the small islands Mugeres and Cancun: the former, 4¼ miles long and ½ a mile broad, is 4 miles from the main, and rising into a small hill 80 feet high, covered with trees, has a fertile appearance: at its S. end, which terminates in a bold white cliff of rock, stands the ruin of a tower, about 12 feet high, of excellent masonry, resembling a martello tower; and a short distance to the N.W. on the shore is the remains of a small stone building, which from its turreted appearance may have been a chapel: there are three similar ones on the E. side of Cozumel:

* That the N.E. point of the peninsula is somewhere thereabout is clear enough, but there is nothing conspicuous whatever; in fact, we learned, from the fishermen, that the interior is swampy and cut up with lagoons to some distance; and it would therefore be difficult to say where *terra firma* commences.

there are also two other smaller dilapidated masses of similar masonry, one on the N. point of Cancun, and the other on the sand-hills W. of the S. end of the island, and which probably gave protection to the anchorage. I think that a clear passage will be found to pass out to the northward.

On the western or inshore side of Mugeres there is a confined but snug anchorage, excellent during northers, with 2 fathoms close to the rocks, which can be entered round the S. end, where an English ship of war is said to have careened in 1801: there are here some small wells, which are used by fishermen; and good wooding.

Cancun is a narrow strip of land, composed of sand-hills, ¼ of a mile wide, and about 8 miles in its entire length, stretching out as two sides of a triangle, enclosing a lagoon between itself and the main land; from which it is not distinguishable, being only separated by a boat-channel at each end. There are small wells in the sand, which supply fishermen with fresh water, at the S. and N.E. points.

Cozumel Island, the north-eastern and most prominent point of which is in lat. 20° 35′ N., and long. 86° 41′ W., and 39 miles south from the centre of Mugeres, is the most considerable island on this part of the coast, being 24 miles long, in a N.E. direction, and 7 miles wide. It is very level, and covered with small trees, whose tops are about 70 feet above the sea. In the few places we penetrated beyond the shore we found swamps and ponds; a small one at the N.W. point was of fresh water. We saw no trace of inhabitants; but there were three towers on the eastern side, similar to the one on Mugeres. A clear bank of regular soundings stretches 7 miles N. of the island, shoaling gradually to the land. The channel between Cozumel and the main is 9 miles wide; in which bottom was not reached with 200 fathoms of line.

85 miles to the southward of Cozumel, and 18 from the main, lies the north end of an isolated coral bank, rising perpendicularly out of the ocean. It is called by the English the North Triangle Reef, and by the Spaniards, with their usual aptitude, *El Chinchorro*—the fishing-net: it is of an oval shape, 23 miles N. and S., and 9 miles wide; composed of white sand; with nearly an equal depth of water all over it. There is an islet, 2 miles wide, near the centre; two smaller ones at the N. part, each covered with mangrove-bushes; and a small sand-bore, only a few feet above the sea, at the S. extreme.

The edge is formed by a coral reef even with the water, but so precipitous on the outer side that no ground could be found, with 95 fathoms of line, 300 yards from the reef, except at two small

places at the N. and S. extremes, where the bank goes off gradually to 5 and 12 fathoms a mile from the reef.

In the main land there is but little feature or variety of appearance, being generally a sandy beach, with level ground thickly covered with trees, whose tops do not attain a greater height above the sea than from 50 to 100 feet; without any signs of cultivation or habitations.

From Cape Catoche to the British settlement of Honduras there is only one elevated ridge discernible from the sea, and this lines the shore, in lat. 20° 11′ N., for a distance of nearly 3 miles, with a white perpendicular cliff about 80 feet high.

In lat. 19° 42′ and 19° 20′ N. there are two openings, about 8 miles wide, with barrier reefs across the greater part of their entrances.* The land is low and thickly wooded; but not seeing any connexion across the bights from the ship's mast-head, an elevation of 90 feet above the sea, they must reach inland at least 12 miles.

After leaving these bays the coast is unbroken till we reach, in lat. 18° 10′ N., the boat-channel that divides Ambergris Cay from the mainland of Spanish Yucatán.

Ambergris Cay, so named from the produce of its shores, is a narrow islet, 20 miles long and about 3 wide, extending S.S.W. in a line with the main land, of which it appears to be a continuation. The western shore is swampy, and cut up by lagoons; but the eastern one is more firm, and there the trees attain a greater height.

Within Ambergris Cay there is a shallow estuary, extending 60 miles from the south point of the Cay into Yucatán, with an average width of 10 miles, and not more than from 5 to 12 feet water over a soft muddy bottom; and communicating southerly with a sheltered navigation within the reefs that bound the whole coast of British Yucatán.

The shore of this extensive estuary is low, thickly wooded with mangrove and other trees, and cut up by lakes, streamlets, and rivers; the principal of which are the San Josef, Rio Hondo, and New River; the first belongs to Spanish Yucatán, and upon it, at a distance of 10 miles from its mouth, stands Bacalar, the most considerable town of the province, to which it gives a name. The inhabitants carry on a small trade with the town of Belize (the seat of government of the British settlement), by market-boats, bringing down fowls, &c., and taking back manufactured goods, which they smuggle into their own country, avoiding the high

* Ascension Bay; a good reef harbour, with 8 feet into the bay. Further south is Shamrock Bay, with a well-sheltered reef harbour, and 7 feet into the bay: called by the Spaniards 'Espiritu Santo.'

duty demanded by the Mexican government from the lawful trader.

Rio Hondo, in lat. 18° 30′ N., is the northern boundary of the British wood-cutting settlement of Honduras, which occupies a coast-line of nearly 200 miles, reaching as far south as the river Sarstún, in lat. 15° 53′ N., with an average breadth of 70 miles; but the land-boundary is ill defined, there being little other rule than that of occupation, the tenure by which more than half the tract now in possession is held.

The last treaty with Spain, in 1786, ceded us territory only as far as the river Sibun, in lat. 17° 25′ N., or 6 miles south of the Belize river and town; while the British settlers are cutting wood on almost every stream down to the Sarstún, holding it by right of conquest, having been in uninterrupted possession since the settlers, assisted by a small naval force under Captain Moss, in the *Merlin*, gallantly repelled an attack made against them, in 1798, by a large Spanish force from Yucatán.

The whole settlement is conveniently intersected by 15 rivers and streams, which, after passing through the country, empty themselves on the coast, and afford the readiest means of transporting wood from the forests to the sea. The rivers and streams, being only navigable for boats, were not examined beyond their mouths, except the Belize and Sibun, and they only for a few miles; but common report, which probably errs by an over-estimate, ascribes to the Rio Hondo, by the river's course, a distance of 50 miles in a N.W. direction; to the New River, 70 miles in the same direction; to the Belize river, 170 miles N.W. by W.; and to the Sibun, 100 miles N.W. by N. These are the largest rivers; and, being placed here in their geographical position, commencing at the northern boundary, it will be seen that they run almost parallel through the upper half of the settlement.

The land in the vicinity of these rivers is low, and cut up by small lakes, nothing being visible from the coast above the level of the trees that line the shore; it is occasionally under water, if the annual rains, which commence in the interior of the country in the month of June, prove more than usually heavy, as in the years 1804 and 1832, when the river rose 20 or 30 feet, and inundated an extensive district. A gentleman, coming down the river at the last period, was carried many miles across the country among trees and houses, all appearance of the course of the stream being lost. It must be observed that the rains in the interior, by which the rivers are swollen, seldom reach this part of the coast, except in occasional squalls during the night.

Some knowledge of the course of the Belize river may be obtained from the following extract from the correspondence of

Mr. Bourn, a Baptist missionary, who visited part of the settlers located on its banks for the purpose of instruction in 1833:—

"In the month of April I left Belize on horseback to prosecute my intended journey, and visit some of the mahogany-works and other settlements on the banks of the Belize river. Never having undertaken such a journey before, and as comparatively few do, excepting those whose business is to look after cattle with no regular roads, I was induced to seek a guide. The only one I could procure without an unjustifiable expense was from those going in that direction after cattle.

"After crossing the river and proceeding alone the greater part of the way through an open pine-forest, I arrived at the distance of what is reckoned 20 miles from Belize, according to the course of the river. I ought to state that, running in a line from E. to W. between the different rivers on this coast, are beautiful and extensive pine-forests, not dissimilar in appearance, only destitute of human culture, from gentlemen's parks, intersected with ponds of fresh water, and everywhere immense numbers of cattle feeding. The banks of the rivers, which are generally of a rich alluvial soil, are covered with a thick impervious forest, except where it has been cut away and burnt for plantations. Through this, after my ride in the pine-forest, I had to make my way to the river-side, which I found less difficulty in doing than I had expected. The name of the place is Free Town.

"Early next morning I left, and after 2 hours' ride reached the first mahogany-works to breakfast.

"The leading person belonging to the works kindly offered to ride with me till I had passed two creeks which flow into the main river. The first of these we found no difficulty in fording; but the other the horse had to swim across. Beyond this is a considerable settlement, frequently visited by numbers who attend to cattle. Here is the commencement of a rich and beautiful savanna, running in a line for miles through the country, without a tree, except on its borders, covered with a rich luxuriant grass from 2 to 3 feet in height.

"I left the next morning and stopped at a place on the banks of the river called Lime-walk, where are between forty and fifty persons. I took my departure from hence, and after a 4 hours' ride I came to very high land consisting of a pine-forest, to the eye of boundless extent. Here I met with a friendly reception from a person I knew, who, with several others, have comfortable establishments. Next morning, the Sabbath, after breakfast I preached to the people. Soon after service my friend rode off with me across the pine-forest to a mahogany-work on the opposite bank of the river. In the afternoon and evening I preached to the people; left early next morning, and after a considerable ride

reached between 10 and 12 A.M. another mahogany-work, where I breakfasted, and my horse swam across the river, and after a long ride reached Rock Dondon, between 4 and 5 P.M., another mahogany-work, taking its name from a large rock standing nearly in the centre of the river; here my horse had to cross the river again. I reached Belize on the Saturday afternoon, after preaching in ten different places."

A hurricane in 1787 caused the sea to rise at the entrance of the Belize river 7 or 8 feet, so as to overflow and destroy nearly the whole town. Great numbers of people were drowned—seventy out of one gang of negroes: those saved were, with few exceptions, rescued by canoes.

In the southern part of the settlement, commencing from 10 miles S. of the Belize river, the hills rise nearer the sea; in some places ridges well clothed with wood come close to the shore. The principal mountains are the Dolphin Head (lat. 17° 12′ N., long. 88° 23′ W.), 5 miles inland, and the Cock's-comb range, so called from its outline (lat. 16° 48′ N., long. 88° 30′ W.), 15 miles from the sea, extending 10 miles in an E. and W. direction, having an elevation of 4000 feet above the sea.

Through this district the streams Manati, Mullin's River, Stand Creek, Sittee, Monkey River, Deep River, Golden Stream, Rio Grande, Moho River, Ternash, and Sarstún flow; the last divides this settlement from the state of Honduras; these (although much inferior in size to the rivers before mentioned) have a considerable flow of pure and wholesome water, which being confined between narrow banks is made available for the conveyance of mahogany.

North Stand Creek, 30 miles S. of the anchorage off Belize, is the best watering-place for men-of-war and vessels needing a large supply.

The Manati and Indian Creek, which last runs into the Sibun, are said to pass through hills 500 feet high, by underground channels, ¼ of a mile long.

If one may judge of the capabilities of the soil bordering on the river from the luxuriance of the corn fields and gardens, there seems no reason against the cultivation of sugar, cotton, rice, cacao, &c. (which last grows spontaneously), were not their exportation prohibited.

A more liberal system is however now in operation, and the cultivation of cotton has commenced.

The sea-face of the whole settlement is bounded by a chain of coral reefs and small islets, at an average distance of 15 miles from the main, with a clear navigating passage within them from 4 to 8 miles wide.

In this barrier, extending 130 miles, there are only two channels through which vessels of 13 feet draft can conveniently

enter; not that the reef is literally unbroken, although the outer edge is so to a considerable extent, but the rocky spots being scattered over a surface in some places 12 miles wide, it is much too intricate for navigation.

Abreast of the southern part of the settlement the reef becomes broken, and finally disappears at a distance of 12 miles from the coast of Guatemala, leaving an open navigation to the Gulf of Dulce,* and the southern British rivers, which are daily becoming of greater importance as the wood on the northern ones becomes more scarce.

Whether we consider this reef as a breakwater along the whole extent of the settlement, or as a shield in troublous times to prevent a sudden descent, we cannot help being struck with its utility; within it, both ships and boats navigate in all weathers by night and day, the former finding secure shelter at any moment wherever they choose to drop anchor, and the latter conveying the inhabitants to and from Belize for their necessary supplies.

It is also a remarkable geographical feature, 2000 square miles of bank, the sea-boundary of which is a perpendicular coral wall, there being no ground found with 95 fathoms of line at 700 yards from the dry reef, except at the opening S. of the reefs, where the increase of depth, although rapid, is not so instantaneous; for after passing the 30-fathom boundary, which is in a line with the reef, there is still, for a width of ½ a mile, 100, 150, and 200 fathom soft muddy bottom, similar to what is found through the channel at from 20 to 30 fathom soundings.

In this basin there is a greater inequality of ground than in any other part of the West Indies; coral spots not more than 100 yards across, with only 3 or 4 fathoms water over them, and suddenly 30 fathoms all round; again, 35 fathoms only 200 yards from reefs even with the water.

To the northward, where the rivers are larger and the outlet not so easy, the depth is from 4 to 30 feet. Off the river Belize lies an enormous bank of soft mud, through which there is a serpentine channel called "*Grennells*," 12 miles long, and only ½ a mile broad, 15 to 30 fathoms deep, the sides of which are almost perpendicular.

In the same latitude as the northern part of the settlement there are three banks of an oblong shape, 20 miles long by 6 wide, separated from each other and the main by channels, from 5 to 15 miles wide, of unfathomable ocean. Two of these, Glover's Reef and Lighthouse Reef, are banks of white sand with from 1 to 3 fathoms water over them, encircled by a coral reef even with the water, on which in each case there are three or four

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* "Golfo Dulce" might, perhaps, be better rendered "Freshwater Gulf."—Ed.

small islets with cocoa-nut and other trees; on one of these stands the lighthouse, marking the approach to Belize and the residence of the pilots.

The third, called Turneffe, is similar to these in shape and in being surrounded by a coral reef, almost perpendicular on the outer side, but internally it is filled with mangrove islets rising out of the water and having narrow channels between them, but so clustered together as to appear like one bushy island.

The whole extent of the main reef is also studded with numerous islets of every variety of size and solidity: first the spot of sand, just raised above the water; then the more extended beach, which nurtures into trees the cocoa-nut cast upon its shores; next those places composed of sand and mud, where the mangrove springs out of the water, and which are in this neighbourhood called by the appropriate name of "drowned cays;" and lastly, the island, a mile or more across, whose soil produces the grapewood-tree, buttonwood-tree (very hard, and valuable for cogs of wheels), and other species of trees, with a girth of more than 3 feet.

The rise and fall of the sea is very trifling, seldom exceeding a foot, and, being irregular, is probably more the result of wind than the tidal wave.

The only town in the settlement is Belize, the seat of government, situate on both sides of the river, which is crossed by a wooden bridge. The storehouses and residences of the principal merchants (mainly composed of wood) form a good street. On the S. shore, fronting the anchorage at the extremity of the town, stand the church and superintendent's residence, substantial-looking brick buildings.

The chief part of the population clusters around the mouth of the river, where are also the court-house, gaol, and shambles.

The barracks, which are occupied by the left wing of the 2nd West India regiment, are north of the town, 1½ mile from the church, which short course is the only road in the settlement on which horses can be used, all distant communication being carried on in boats.

The anchorage off the town is safe and convenient for vessels not drawing more than 15 feet water; and this being the only port of entry, hither all vessels resort, whether their object is to obtain mahogany or to bring British manufactures, to be hence re-shipped in boats or small vessels into Spanish Yucatán, or the Guatemalian territory.

A late custom-house regulation has just altered this, and obviated the necessity for vessels touching here, a change which may injure this town and settlement, but will much increase the general trade, opening the whole coast of central America to English enterprise. Whether that part subject to the King of Mosquitía

will be benefited or otherwise, time will show. Experience has unhappily proved that the uncontrolled intercourse of civilised adventurers is more mischievous than useful to a population but little removed from barbarism.

The trade of this settlement at present amounts to more than one hundred vessels, and 20,000 tons; the imports being the necessaries of life, as salt meat, flour, vegetables, and all sorts of British manufactured goods, both for immediate use and for exportation to the surrounding country.

The exports are mahogany, dye-woods, tortoiseshell, indigo, and cochineal, the two last being received in exchange for British manufactures.

The population of the settlement, by returns in the Colonial-office, amounted in 1837 to 3320. If we add to this 1000 Caribs, 250 troops, and 500 discharged pensioners from our black West India regiments, we shall have a total of 5070: 2300 of these may be resident in the town of Belize, whose natives, for its size, present as mixed an assemblage as, perhaps, can anywhere be seen,—British, Natives of Spanish Yucatán, Negroes, Caribs, and Mosquito men: 2000 are woodcutters, Africans,—except about 300 of the Carib tribe, more athletic men than are seen in any other part of the West Indies. Their fine appearance is doubtless to be attributed to the moral discipline under which they lived, even in the bygone days of slavery.

In the mahogany-works no whip was used as a stimulant to labour; task-work was the general system; and the enslaved Negro and free Carib worked side by side, without any other distinction than what ability or industry gave. This extended to the higher grades of society; this settlement being the only one in the West Indies, in which distinction of colour was not known. Here, for years, the descendant of the negro has sat on the magisterial bench, and enjoyed equal privileges with his white brother: 1000 are Caribs, including the 300 already mentioned as woodcutters, who have long been accustomed to hire themselves in the mahogany-works.

They reside at a flourishing village on the banks of North Stand Creek, which now probably contains one half of the entire tribe, whose fathers were banished in 1795 from the island of St. Vincent to the island of Ruatan, on this coast, whence they were soon invited by the Spaniards to locate themselves on the main, near Truxillo, and subsequently spread along the whole coast, from Cape Camaron, in lat. 16° N., long. 85° W., to this place. This village is now their largest settlement, and is rapidly increasing, both from natural causes and immigration—these poor creatures at length, finding a more safe retreat under the British flag (from which the policy and justice of their expulsion was at

least doubtful) than under the less-settled government of central America: 70 are fishermen scattered along the coast and on the outlying islets, whose chief occupation is catching the hawksbill turtle.

The men employed as cutters of mahogany are located on the different rivers, in gangs of from 20 to 50 each, for nine months of the year; each gang having built for themselves a temporary village on the river's bank, nearest to the district fixed upon to work, according to the abundance of the mahogany. The autumnal months are occupied in making a road, by felling trees, &c., to the centre of the selected plot. In December the gangs on the Belize and neighbouring rivers return to the town for the Christmas holidays, a season given up to the training of the militia and social festivity.

In January they return to the woods for the long dry season, which commences in February; they are occupied in cutting till April and May, during which months they are employed in the laborious work of drawing out the wood to the river on trucks, with twelve or fourteen oxen each.

This must be accomplished by the 1st of June, when the rains commence, which cause the river to swell, and carry all the logs that have been tumbled into it down the stream. The gangs of workmen follow after in canoes, to extricate such logs as have become entangled by the way, till all reach the sea, where they are stopped by a boom, sorted out according to the owners' marks, and hauled out of the water into their respective yards, to be squared and prepared for shipping.

By the 1st of August all must be on board the vessels, to enable them to sail on that day, so as to avoid the hurricanes, which, although they have not visited this coast since 1787, are prevalent in the Gulf of Florida, through which the ships have to pass on their way to Europe.

For such a large and widely-scattered population, mostly of our own countrymen, and speaking our own language, the means of instruction of one church and one chaplain, liberally assisted as it is by missionaries from the Wesleyans and Baptists, are lamentably deficient: the people resident in the distant parts of the settlement live the greater part of their lives, without any opportunity of enjoying the outward ordinances of religion. In one case, a fisherman applied to Captain Owen to baptize his child, it being next to impossible for him to take his family near 100 miles to the church. The missionaries preach at out-stations periodically—at Stand Creek for the Caribs, and at Mullin's River and the Boom (a village 30 miles up the Belize River) to the settlers: the residents at each station having built places of worship. Another clergyman of the English church is much wanted, whose

duty it should be to itinerate and visit every part of the settlement, which would enable all to enjoy occasionally the rites of our church.

The situation of this colony, viewed in reference to the great subject of civilisation, appears especially to demand attention. It is surrounded by a large Spanish population, who, although intelligent, are, as far as concerns the majority, only nominally Christianized, according to the form of the Romish faith.

It is intimately connected with the natives of Mosquitía, who, notwithstanding their subjection to the British crown for the last century and a half, are living in the depths of barbarism, without clothes and without letters; in fact, in a more degraded state than any other tribe on the east coast of either of the Americas.

May not the British possessions here be made a central point, whence Christianity, civilisation, and commerce may be diffused over the whole of Central America?

The State of Honduras, one of the five districts composing the republic of Central America, joins British Yucatán. The coast which we have now to describe runs E., or nearly at a right angle with that of the English settlement, extending a distance of 200 miles to the small river Lamas, which separates this state from the kingdom of Mosquitía. The extensive angular bay upon which it is situated, contained between Cape Catoche and Cape Gracias á Dios, is called the Bay of Honduras: the frequent repetition of which name is calculated to cause confusion. Besides the bay and State, there are—3rd, the Gulf of Honduras, the S.W. corner of the bay; 4th, the British settlement of Honduras, also known as British Yucatán; and, 5th, Cape Honduras, lat. 16° 1′ N., long. 85° 59′ W., forming Truxillo Bay, also called Point Castillo.

The coast of the State of Honduras is very different in character from the low shores of Yucatán; pointed mountains rise one above another till they attain an elevation of 7000 and 8000 feet above the sea. The immediate shore is agreeably diversified with hill and dale, trees and dark-green verdure close to the sea: while the mountain-tops, being frequently capped with clouds, give the whole a bold and heavy appearance.

A bank of soundings, of irregular breadth, is found along the whole extent of coast at the western part from Omoa to Point Sal. It is not more than 2 or 3 miles wide; but from hence, while the coast bends inwards to the southward, the soundings sweep round the island of Utilla, a distance of 21 miles from the land.

The bank S. of Utilla and the Hog Islands, for a width of 25 miles, is studded with shoals, which should prevent vessels from passing inside of these islands without due care—a course seldom requisite, as there are no harbours in this portion of the coast:

on the other hand, the bank off the towns of Truxillo and Omoa is clear, with regular depths.

The W. extremity of this shore forms, with British Yucatán, the Gulf of Honduras, 8 miles wide by 16 long, with a depth of water and bottom calculated to make it an eligible roadstead for vessels communicating with the Gulf of Dulce. In the S.E. corner there is a snug harbour, called St. Thomas's Bight, a basin more than a square mile in extent, of from 3 to 5 fathoms' depth. The shores, which rise abruptly from the water, are thickly clothed with indigenous forest; no appearance of cultivation being anywhere seen: nor have its waters been much disturbed since the country has been under its present governors. While it was a colony of Spain, ships from the mother-country used to await here the arrival of their cargoes from the rivers which empty themselves into the Gulf of Dulce.

IV.—*Account of the Province of Vera Paz, in Guatemala, and of the Indian Settlements or Pueblos established therein.* By Padre Fr. Alonso de Escobar. Communicated by Don Carlos Meany.

The province of Vera Paz may be divided into the high country (Alta), the low (Baxa), and the very low (Muy Baxa). This division opens to view the natural advantages of an intertropical territory, comprising a variety of climates, and thereby capable of rearing and maturing the vegetable products of many lands, both of the East and West Indies. In the southern part of the province, and towards the capital of Guatemala, are the settlements of Chól, Rabinal, Cubulco, and Salamá. These, having a climate ordinarily hot and dry, must be assigned to the low division of the province.

Of the principal rivers towards the S., the first is the Rio Grande, the sources of which are on a mountain in the settlement of San Tomas Chichicastenango, in the jurisdiction (Alcaldía Mayor) of Sololá: passing through this district, it divides it from that of Zacatepeques, and afterwards entering the district of Chiquimula, it takes the name of Motagua, and flows into the Atlantic Ocean. The river Salamá rises in a mountain opposite to the San Geronimo estate (hacienda), in a tract called by the Indians Chirremundo, and flows by the settlement of Salamá, from which it takes its name. Joining in Panzuh with the river Cachil, which comes from the mountain of Matanzas (slaughter), it flows on till, at the Sta. Anna estate, it unites with the river Chixoy, called also Sacapulas, and the sources of which lie in some mountains within

the jurisdiction of Totonicapam. A little further on it receives the river Cachecla, descending from the mountain of Pambach, which lies on one side of the settlement of Tactic.* The furthest information which I possess respecting this river (the Salamá) is, that when it flows by the mountain of Chan[illegible]ná, it is already of great magnitude.

In this (the southern) quarter are found many sulphureous and chalybeate springs. Proceeding from Guatemala, after passing the Rio Grande, we meet the Rio de la Agua Caliente, so named from the hot water flowing into it from numerous boiling springs. In the settlement of Salamá, near the banks of the river, are several hot water springs, popularly called the Licks (Chupaderos), because they are sought by the cattle on account of their saltness. Sheep drinking those waters soon grow fat, and their flesh acquires a delicious flavour. A great mistake prevails among the people in Guatemala, who ascribe to those sulphureous waters a remedial virtue in the endemic disease of goître (güegüecho); and those who suffer from it consequently come and reside for a time in the settlement of Amatitan. But the experience of the country proves the contrary fact, since those dwelling near the banks of the Rio de la Agua Caliente, and the people of Salamá, who drink its waters, are commonly affected with goître. A similar observation has been made by Alcedo, respecting the river Guali, in the kingdom of Grenada, where the *güegüecho* of our people is called *coto.*

Twelve leagues from Salamá, on the summit of the mountain, after the forests of Patal, on the royal road, stands the settlement of Tactic; and 4 leagues further on is the settlement of Santa Cruz; that of San Cristobal lying on the left of the road; 4 leagues more reach the imperial city of Cobán, wherein resides the alcalde mayor of the province. One of the seven divisions of Cobán, S. Juan Alcalá, was originally peopled with the Indians of Chisec, or the tract of country north of the city. A league from S. Juan Alcalá is the settlement of S. Pedro Carchá, S. of which, little more than a league, lies that of S. Juan Chamelco. The climate of these settlements is cold and excessively humid, on account of the heavy rains that fall all the year round; although there is a transient summer in March and April, when the sun warms the earth a little, to prepare it for the speedy recommencement of winter. But this applies only to the settlements on the summit of the mountains, and not to those below, which have six months of summer, and six of winter, as is generally the case in America. An unclouded sky is a rare spectacle in those regions; but when bright weather is coming, the river

* The Taltic of other authorities.—ED.

Chixoy announces it at San Pedro, and the river Chico, in Cobán, by a fitful murmuring in the stillness of the night. However, in compensation for bad autumnal and summer seasons, these mountains never suffer from drought, but the trees and herbage continue fresh and green the whole year round. The coldness and wet are most sensibly felt in November, December, and January. During the rest of the year the air is mild and agreeable. The stormy winds serve to cool the low country towards the S. The day on which the north wind begins to blow in the mountains receives from the Indians a particular name (Boç), because with it begins the return of the water-fowl.

The mountains are so many and so close together that there is hardly half a league of level land to be met with in all this high country. Whichever way the eyes be turned they are sure to meet with mountains, most of them of great elevation. Hence it is that the roads here are extremely rugged and precipitous, insomuch so that it is only on the royal road, and in tolerably dry weather (which comes but seldom), that it is possible to travel. After rain has fallen, as the roads are all up and down, and of slippery clay, it must be a very good and practised beast that does not fall at every step. Everywhere, indeed, there is danger of falling; even in the passages and court-yards of the houses, which become so slippery when wet, that treading them is like walking upon soap.

For the Indians, however, there is no road too bad; and where no beast can keep its feet, they go and carry loads with little difficulty. Herein is seen the power of habit, since these people beginning at six years old to carry burdens become such active carriers as to be able to make journeys of 200 leagues, or more, without suffering, when the best mule, if unshod, becomes so lame as to be unable to move a step. I have often seen them, after having hurt themselves by stumbling, hold a burning skewer near to the wound or bruise, to prevent inflammation, and start fresh on their journey the day after this painful treatment.

When on a journey they carefully avoid drinking cold water, and quench their thirst with water as warm as can be taken. Their ordinary food is a little roasted maize paste, called totopoxte, which they crumble into boiling water, and so eat it; or else they warm it entire with chile* and salt; and this is their whole nourishment. Wherever they stop they stretch themselves at full length, although it be on the stones, extending to the utmost their legs and arms, and by this means they soon resume their vigour. There are reckoned to be 1000 Indians in Cobán alone; above 300 in S. Pedro Carchá; and 200 in S. Juan

* Capsicum.

Chamelco, not including those who wander over the whole kingdom buying and selling. They usually take to Guatemala for sale a great quantity of rice, and thread of all sizes. To Chiquimula, Zacapa, and San Salvador, they take blankets, knife-blades, Indian mantles, pimento grown in the country, hammocks, lasos, and a few other articles; and in return they bring back money and cattle, which they go for to Esquipulas, Cucuyagua, and Gracias, drawing also from Sonsonate and the Salinas the salt which constitutes one of the principal articles of their trade.

But to return to the Cordillera of towering mountains which traverse the high country to an immense distance. Those mountain-tracts still remain quite unknown even to the Indians themselves, who never penetrate into them except by the road to Petén. South of Cobán and of S. Pedro Carchá extend the mountains of Patal, which separate the low settlements of Salamá, Rabinal, Cubulco, and Chól, from those of the highlands; and further on, in the same direction, are the lofty summits of Chichen, Chitzujay, Zaamico, Zacampat, Quixmez, Iloman, Chixoth, Guayona, Chidla, and Zacriyl, the peak of which is laid bare by the fire and smoke that have at times issued from it. Besides these is seen Xucamel, the highest of all these mountains, rising between Chichen and Chitzujay, with its summit towards the south-east, its branches extending to the lake of Bodegas.

East of San Pedro are the mountains of Chintyl and Chacalté; after which follow those of Chicac and Tamajul; beyond which the Indians penetrate no farther in that direction. The limit of their excursions is, they say, three days from the settlement; beyond it the country is reported to be uninhabited, and to be filled with rugged mountains, which, according to their accounts, I should suppose to run towards the port occupied by the English in Belize.

To the north-east are situate San Augustin Lanquin and Santa Maria Cahbón. The first of these settlements is 20 leagues, the second 28 leagues, from San Pedro, by roads of the worst description, over mountains named Ziguanja, Chirreguim, Talal, and Chimelo. At the chief stations on those roads, are lodges (ranchos) for the travellers to and from these settlements, or to the castle of Petén.

San Pedro confines towards the N. on the widely-spread mountains of Toccalá, Zucha, and Chiacam; and in the same direction occur the plains of Ivovilá, and of Baból, with the mountains of Zaclech; the last being accessible only to the Indians, who advance a 3 days' journey into this impracticable region for the sake of collecting some fruits and other productions, but have no further knowledge of that country, which they describe as uninhabited.

On the north-west are the mountains of Chisec, anciently inhabited by the Indians now established in the Alcalá division of Cobán. In the same mountains the Indians of Cobán still grow their cotton and keep their plantations of achiote* and cacao; not that they plant or do much more than take advantage of the earth's spontaneous production. Two days from the mountains of Chisec begins the central ridge of the high land, on which are plains of boundless extent, with one of the largest rivers of the kingdom winding through them.

The Rio de la Pasion rises among the mountains of Chammá, in the lake of Lacandón. It flows at first from W. to E.; and when it passes by the mountains of Chisec, north of Cobán, it is already 50 yards wide, and 20 feet deep. In winter its width increases to half a league, or considerably more, according to the violence of the rains, and its depth, of course, is at the same time augmented. On reaching the mountains of Petén, it is joined by the rivers Santa Isabel and Mataquece, with many other streams, till at last it unites with the rivers of Utzumacinta, and finally discharges itself northwards into the sea, west of Campechy and the Laguna de Terminos, forming the great delta called the Barra de San Pedro y San Pablo. The kingdom of Guatemala can never be said to have attained prosperity so long as the banks of this great river remain uninhabited and uncultivated.

On the banks of the river de la Pasion dwell many unconverted Indians, as at Petén and towards the mountains of Zaclech, whither the people of Cobán are fearful of going, lest they should fall in with the Lacandónes. This river is the Nile of Guatemala, fertilizing with its waters the country through which it flows. It abounds in fish: the land near it is well suited for the cultivation of coffee; and its cacao is equal, if not superior, to that of Soconusco, and in great abundance, though unaided by cultivation. The sugar-cane is said to attain there in its wild state a degree of perfection unknown elsewhere; nor does it require irrigation, so rich and humid is the soil. The best dye-woods, as well as caoba,† cedar, and other timber for shipbuilding, may be had in any quantities on the banks of that river. These fertile lands are far more valuable than mines of the precious metals. But to return to the description of the country round San Pedro.

Between the W. and the N.E. lie the mountains of Chammá, inhabited by the wild Indians of Lacandón, who gave so much trouble from the first conquest of these countries till the end of

* The achiote (so called from the native Mexican name achiotl) is the shrub yielding the red pulp from which is prepared the dye or drug called in commerce annotto. It is the Bixa orellana of Linnæus. The names bixa and roucou, which latter is used by the French, were both learned from the natives of Brazil.—Ed.

† Bastard mahogany.—Ed.

the seventeenth century, when the greater part of them were reduced to subjection. Our historians assign to those Indians a great extent of territory, which in fact they still possess; and it appears to me that, for the sake of avoiding confusion, a distinction ought to be drawn between the Western and Eastern Lacandónes. All the country lying on the W., between the bishopric of Ciudad Real and the province of Vera Paz, was once occupied by the Western Lacandónes. Some of them may still remain there in the recesses of the mountains, the extent and intricacy of which makes it difficult to explore them perfectly.

The country of the Eastern Lacandónes may be considered as extending from the mountains of Chammá, a day and a half from Cobán, along the borders of the river de la Pasion to Petén, or even further, as this nation, by means of the numerous canoes with which it trades on the river, asserts the occupancy of a territory 100 leagues in length, without having therein any fixed abode; for if they be discovered in one place, they immediately take to their canoes with their wives and children, and go off to some other; and hence many unconverted Indians still remain in Petén.

With the subdued Lacandónes, who were taken at the end of the last century from the mountains of Chammá, the Dominicans founded San Márco de Cobán; and some of their descendants there still speak among themselves the Echolchi language, which is that of the Lacandónes. The division of San Tomas Apóstol is as ancient as the conquest, and was peopled with Lacandón Indians dwelling to the N. of Cobán. In like manner San Domingo de Cobán was established with Indians taken from the mountains of Chichen and Xucamel. The four divisions of San Pedro Carchá were peopled with the Indians of the immediate neighbourhood. In general the Indian communities of San Pedro and Cobán still gather the produce of those tracts of country which anciently belonged to their respective ancestors.

In the lowest part of the province, N. of San Pedro, lie the settlements of San Agustin Lanquin and Santa Maria Cahbón, in a remarkably hot and humid climate. 23 leagues from Cahbón, in the midst of inaccessible mountains and morasses, dwell the Chóls and Manchés, the subjugation and conversion of which Indian nations began in 1675. On that occasion were founded the settlements of San Lucas Zaclech, Nuestra Señora del Rosario, and Santiago. Further on, near the river Yaxjá, was established the settlement of San Jacinto Matzin, and 4 leagues higher up San Pedro and San Pablo Yxil: at another station, 4 leagues on, was fixed the settlement San José May, and subsequently those of Asuncion, San Miguel Manché, San Francisco Socomo, and San Fernando Axoy, making altogether eleven settlements in the province of Chól and Manché.

But this unlucky province did not last long, and with it vanished the hopes of enlightening and converting a numerous aboriginal population. The Indians, taxed excessively on one hand, and on the other terrified with threats of force, of which they had had some experience, suddenly took to flight, withdrawing to the most remote and trackless mountain region, and have never been seen from that time to the present. Only a small remnant of them was at that time brought together and placed in the settlement of Santa Cruz del Chól, between the Rio Grande and Rabinal; so few indeed remained that perhaps there is now in that place hardly one Indian descended from the original Chól and Manché settlers.

It is doubtful where these two Indian nations, viz., the Chóls and the Manchés, eventually fixed themselves; but it is likely that some of them retired, beyond the mountains of Chammá, to the river Zaclech, in order to unite with the Lacandónes, who, as it was afterwards known, had numerous canoes, with which they carried on traffic on that river, both those originally established there and the new comers. The greater number of the emigrants, however, probably went eastwards, to the neighbourhood of the sea.

From Cahbón the road for Petén leads, in 10 days, over uninhabited mountains to the settlement of San Luis, which is the first in the jurisdiction of that government (Presídio). The opening of this road gave rise to much altercation between the Alcalde Mayor Pacheco, and the engineer Don Juan Antonio Carvajal; the former opposing in every way the decisions of the latter, who had been appointed for the special purpose of constructing this road, but who never completed the work, because, after surveying an immense extent of mountainous country, he found it impossible to make the road where the Alcalde Mayor proposed. His instructions were to open a line of road, avoiding as much as possible the main chain of mountains. But this was never done; for in going to Petén at the present day we have all the mountains to cross with great toil and difficulty. Had it been then known that the Indians descend the Rio de la Pasion in canoes, from the place where it passes the mountains of Chammá, a day and a half's journey from Cobán to Petén, we might probably have now had a shorter as well as more convenient mode of communicating with the latter place. But by land it is not likely that the road will ever be much abridged, or otherwise materially improved; for if the line of level country be sought out, it will be found to be intersected by numerous rivers not fordable in the wet season, and the crossing of which at any time would be a work of hazard and delay.

Before we leave the country of Cahbón there are two things

to be mentioned: the first is that the cotton of those mountains is the best produced in the whole kingdom, being at once fine, white, and extremely soft: it is spun in large quantities by the Indian women. Next, it is to be remarked, that in this settlement there are few persons without goître; and that the waters in the highlands, so far from engendering this disease, even cure it; while in the valleys below, on the other hand, they produce it.

Halfway down the mountain of Xucamel, S.E. of San Pedro, facing the S., stands San Pablo Tamajum, a settlement pertaining to the curacy of Tactic, from which place it is 4 leagues distant by a miserable road. The elevated situation makes the settlement melancholy; but, in respect to climate, it is advantageously placed between the extremes of temperature. The river Polochic passes through it, descending from Xucamel, where that river has one of its two sources: so near its origin it is no great stream. 4 leagues from Tamajum, going along the river, stands San Miguel Tucurú, likewise depending on Tactic. Its climate is extremely hot and moist, as is the case with all the country lower down to the lake of Bodegas and the Gulf; and is consequently well adapted to the cultivation of cacao, cotton, coffee, achiote, indigo, and sugar.

About 8 leagues or little more below Tucurú, and near the river Polochic, is the site wherein formerly stood the settlement of Santa Catalina, which, according to the accounts of old Indians, was destroyed by the English. At present there is at that place an estate whereon cacao and indigo are cultivated, and where the increase of the cattle speaks well for the soil and climate. 3 leagues lower down is the wharf or landing-place (embarcadero) called Ave María, where the canoes and boats with goods from Honduras used to unload, before the navigation of the river was closed up. By this channel came the images, bells, and ornaments sent from Spain for the churches in the settlements. 2 or 3 leagues further down the river stood the settlement of San Andres Apóstol, which was also destroyed at the same time by the English.

It is impossible to ascertain exactly where the settlement of Xocolo stood near the lake of Bodegas. Nueva Sevilla is said to have been built in 1544 in the plain of Munguijá, 3 leagues from the port of Honduras, on the bank of the river of Bodegas, by some Spaniards from Yucatán and Cotzuniel, who wished to take possession of the country; but their oppression of the Indians was carried to such an extent that three years later the royal authority was obliged to interpose and to break up their colonies, which were soon evacuated. The evil, however, was not so easily removed. The discovery of the port and of the means of communi-

cation with the interior by the river entailed lasting vexations on the Indians inhabiting its banks, who were compelled to serve as boatmen and carriers, subject to all kinds of contumely and unfair dealing. The consequence was that they also deserted the country. Formerly, while the settlements flourished and the Indians were numerous on the banks of the Polochic and the shores of the Gulf—when desolation did not as yet reign paramount as it does at present—it was customary for the Prior of Cobán to send to the coast to greet the missionaries arriving from Spain, and to take charge of them in their journey up the country. But at the present day no one would think of sending a messenger from Cobán to the sea-shore; nor would any missionary venture to traverse the unhealthy desert intervening, since those who enter it rarely survive to tell their safety. Yet we are informed that companies of Dominicans have at various times ascended to Cobán by the river Polochic, and certainly that route wants only practicability to be preferable to any other.

From the preceding description it will have been seen that the settlements in the elevated country, cold and very humid, are six in number, viz.:—Santa Maria Asuncion, of Tactic; Santa Cruz, de Santa Elena; San Cristobal Caccoh; the imperial city of Cobán; San Pedro Carchá; and San Juan Chamelco. The settlements in the warm and dry climate are four, viz.:—San Pablo Ravinál; Santiago Cubulco; Santa Cruz del Chól, and San Mateo Salamá; those in the region of great heat and humidity are San Augustin Lanquin, Santa Maria Cahbón, San Miguel Tucurú, and San Pablo Tamajum; making altogether fourteen settlements, now comprised in the province of Vera Paz. Two settlements which were established among the Polochic Indians, viz., Santa Catalina and San Andres, have disappeared; and two others, viz., Xocolo and San Pablo de Amatique, with New Seville, in the country of the Poconchics, have experienced a like fate.

V.—*Notes on the Lake of Nicaragua and the Province of Chontales,* in Guatemala.* By Chevalier EMANUEL FRIEDRICHSTHAL.

[THE disturbed state of Mexico having prevented M. Friedrichsthal from executing his original intention of travelling into California, he turned his steps to Guatemala, a country no less interesting than the preceding, and nearly as much distracted with intestine wars. He found the civilisation of Central America to be in a very low state of developement. Indolence is there the vice of all classes; and though public spirit is not absolutely

wanting, yet those who are animated by it have neither the union nor the energy requisite to enable them to cope with the ambitious disturbers of the public peace. A territory of 28,000 square leagues is there possessed by only two millions of souls; and this scanty number has diminished rather than increased during the discord and confusion of the last sixteen years.]

Under such circumstances, observes M. Friedrichsthal, the important question of a union of the two oceans (viz., the Atlantic and Pacific) has been entirely forgotten; and I believe that I do not err in asserting that Europe pays far more attention to this grand project than the inhabitants of Central America, wholly unacquainted as they are with the advantages of an extensive commerce and with the means of promoting it. It is also not to be expected that this state, with its limited resources, should ever be able to accomplish such a work; and it was therefore proposed, before the last war, to engage some mercantile houses of Paris in the execution of this project, the recompense consisting of tolls and 50 square leagues of land.

Some preliminary labours, executed in the first instance by order of the King of Holland, and afterwards by the Central Government, have not only proved the possibility of making the river St. Juan navigable, but have also been instrumental in discovering two points where the height of the Cordilleras is so inconsiderable as to allow a passage to be cut through them. At one of these points the immediate connexion of the Lake of Nicaragua with the Pacific might be effected by a channel of 5½ leagues long, S. of the town of Nicaragua. The intervening neck of land has only an elevation of 487 English feet above the level of the lake, which again, according to the official report of Bailey's measurement, is 128′ higher than the Pacific.

The second route would lead from the above Lake, ascending the river Tipitapa,* through the Lake Managua, towards the town of Leon, where mountains of a still less elevation than the above are to be cut, when a channel of 13 leagues long would lead into the Bay of Cochagua. But the realisation of the second plan would be much more expensive, as the Lake of Managua, which is 28′ higher than that of Nicaragua, forms, at the place where it narrows itself into the river Tipitapa, a cataract, having a fall of 14 feet, which could only be surmounted by expensive locks. Nevertheless, the scheme of uniting the two oceans presents no difficulties which may not be readily overcome by the resources

* The river joining the two lakes is named Panaloya by Mr. Lawrance, mate of H.M.S. Thunder, who in 1840 ascended the river St. Juan in a boat, made a brief survey of the Lake of Nicaragua, and crossed from Grenada to the shores of the Pacific, 22 miles distant. The results of his observations enrich the map accompanying this part of the Journal, the hydrographic details of which also exhibit much improvement. —Ed.

of the age, or which are not light in comparison with the benefits likely to redound from its execution.

The province of Chontales, on the N.E. of Lake Nicaragua, presents in general a soil of alluvium, being an undulating country, without any very determinate character, furrowed by gullies and narrow runs of water, and dipping generally towards S.W. Porphyry appears but rarely at the surface.

The river which, according to some maps, is placed in the N. of the province, under the name of River of New Segovia, is called in the country Lama; and at the spot where the maps name it Rio Escondido, the Caribs call it Siquía. The length of its course may perhaps be 55 leagues. The depth of the river Tipitapa is from 9 to 21 English feet; its breadth, at an average, 100 yards. The city of New Guatemala, placed in some maps on the shores of the Pacific, lies 36 leagues N.E. from that point, in the interior of the country. Old Guatemala is 12 leagues from New Guatemala, towards the S.W. The extent of the adjacent Balsam-coast comprehends only the tract between Sonsonate and St. Vincent. The elevation of Old Guatemala may be about 5000 feet; its mean annual temperature is 68° Fahr. The Volcanoes de Agua y de Fuego (of water and fire), near that city, are 15,000 feet in height. The first, ½ league W., the second 1 league N.N.W. from the town. The latter rises a little higher than the former. The place called Mixco stands 3 leagues W. from New Guatemala, and about 500 feet higher. The Volcano Guanacaure has an elevation of about 3000 feet; Atillan, 25 leagues N.W. from Old Guatemala, 12,000 to 13,000 feet; Cosequinan, on the uttermost point of the isthmus, which surrounds the Bay of Conchagua to the S., 1000 feet; Nisalco, 2 leagues N.E. of Sonsonate, the most active of all, 1500 feet. Its explosions are not connected with a continued roaring, but with violent detonations, which may be heard from 20 to 50 times in twenty-four hours.

The island of Ometepe, in the Lake of Nicaragua, is formed of two cones of porous granite, which are connected by an isthmus 2 leagues long and ¾ broad. Its entire length is 9 leagues; its breadth (measured across the eastern mountain, Las Maderas) 3 leagues; across the western mountain, de la Consuncion, 2½. The former shows at long intervals an inward volcanic activity, manifesting itself by heaving and by a low grumbling; it is thickly wooded, much lower than the following, and is said to have on its summit a small fresh-water lake. The Cerro de la Consuncion has, according to my barometrical measurement, 5252 English feet elevation above the Atlantic;* it is likewise

* The measurements of Mr. Lawrance gave to the Peak of Madera 4190 feet, and to that of Ometepe 5050 feet above the lake; and as this is 128 feet above the Pacific, the

wooded, and on its western slope a savanna, ¼ of a league broad, extends up two-thirds of its height: it is steep and has a beautifully conical form. The atmospheric precipitation on its summit is so great that we were wading deep in mud, and the trees teeming with wet. Its summit, divided into two low hills, embraces a lake 132 paces in circumference. This lake is girt at its N.W. side by a rocky wall 4 feet high; but in the rainy season it flows over to the W., and forms several falls, being supplied by its own springs.

The island contains two villages, named Ometepe and Muyagalpa. The first lies on the N.E. base of the Cerro de la Consuncion, and has 1000 inhabitants; the latter W.N.W. from the mountain, 3½ leagues from Ometepe, and has 350 souls. The whole population of the isle, including the dispersed haziendas, is 1700 souls.

I have found in the province of Chontales remains of ancient towns and temples, the idols of which are at several places half buried in the soil. The western shores of Lake Nicaragua, as well as the foot of Mount Bombacio, exhibit many traces of stone images, architectural ornaments, and vases. The islands of the Lake, especially Ometepe, seem to have served as sepulchres to surrounding populous towns, inasmuch as extensive Necropolises, or Cities of the Dead, are to be met with on them, corresponding in character with those of the ancient Mexicans.

VI.—*Journey from the City of Mexico to Mazatlan, with a Description of some Remarkable Ruins.* By M. J. Löwenstern.

Leaving the city of Mexico on the 24th of July, 1838, I proceeded the first day 7 leagues N. to the town of Guautitlan, formerly a Repartimiento (royal donation of land and Indians) belonging to the family of Alonzo de A'vila, one of the Conquistadores. From Guautitlan I arrived next day at Huehuetoca, an inconsiderable place, but interesting from its being near the Desague, or outlet of the waters from the valley of Mexico, which, though from its magnitude one of the most extraordinary works of art, is more like the bed of a torrent formed by nature than a channel cut by the hands of men. Thence to the rancho (small farm-house) of Bata, 4 leagues, and 4 more to Tula, anciently the capital of the Toltecs or Tultecs, the most ancient inhabitants of Mexico known to history.

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mean height of which exceeds that of the Atlantic by 3·52 feet (Lloyd in Phil. Trans., pt. i., 1830), it follows that the two measurements of Ometepe differ only by 70¼ feet.—Ed.

Leaving Tula, which combines the most splendid mountain scenery with great fertility, I reached, after a journey of 3 leagues, the Hacienda de San Antonio, and 3 leagues further, that of La Goleta. These haciendas (large farm-houses) generally consist of some stone buildings, with a chapel, surrounded by a stone balustrade, and with a few miserable huts. Passing some houses called San Miguelito, I arrived at Arroyo Zarco, distant 6½ or 7 leagues from La Goleta, and about 12½ or 13 leagues from Tula.

The hacienda of Arroyo Zarco consists of a few houses situate among hills, and formerly was appropriated to the Jesuit missions engaged in the endeavour to civilise the two Californias. In its neighbourhood is Aculco, where, in the late revolution, Hidalgo was defeated by Calleja.

After Arroyo Zarco are the Cerro and Llanura del Càzadero. About the middle of the sixteenth century the Llanura was the scene of a great chace, which the viceroy, Don Antonio de Mendoza, gave shortly after the conquest, in the style of the old Mexican Emperors, with no less than 15,000 Indians assembled for driving the game together.

This plain, about 6 leagues in circumference, often exhibits the phenomenon of the mirage. The country is every where well watered, and beyond the Cazadero presents a continual interchange of plains and mountains, forming most splendid scenery, and constantly increasing in elevation. La gran Peña de Vernal, a mountain on the right hand to the E., presents one of the most striking objects.

I here met with a small fruit called carambola, like grapes, which I had never before seen nor tasted. The red tuna, the fruit of the nopal (prickly pear), is in great abundance, but without the grana (cochineal insect) on its leaves. The maguey (aloë) is very common, but here little cultivated for pulque, the use of which liquor ceases entirely in the western parts of Mexico.

From Arroyo Zarco to San Juan del Rio are 12 leagues. This town is very neat and clean. Its inhabitants are, next to those of Queretaro, the greatest robbers in the republic, and are organised in regular bands.

On leaving San Juan del Rio, I crossed a splendid bridge of five arches, built of hewn stone, over a considerable river, whence the town receives its distinctive appellation "del Rio."

I was surprised at the state of cultivation in which I found this beautiful country: fields without intermission covered with maize, or cebada (barley); yet the ploughs are here of a very primitive construction, drawn by oxen, which are urged on by their drivers with long pointed sticks like lances, quite in the Patriarchal style. The attention is here equally engaged by the beauty of the sur-

rounding mountain scenery, and by the fertility of the plain. The soil, black and rich, is intersected by numerous canals, which during the rainy season, in the months of July or August, irrigate all the fields.

3½ leagues from San Juan is the Hacienda de Sauz; 7 leagues farther on is a small place, called El Colorado, in bad repute for the many robberies committed in its hilly and intricate neighbourhood; and after 4 leagues more (forming together 14½ from San Juan) is Queretaro; the houses of which, surrounded by gardens, enclosed with gigantic organ-cactus, and large beautiful cypress-trees, and its majestic stone aqueduct on lofty arches, present a most lively and charming picture.

Queretaro is the principal town of the Departimiento, with about 20,000 inhabitants, possessing fine churches and a great number of public fountains, erected in the reign of Ferdinand VI. Many articles are here manufactured from the fibres of the maguey, or aloë, as thread, ropes, and saddle-cloths.

It is particularly to be remarked that beyond or westward of Queretaro all the rivers take their course towards the Pacific Ocean, this town being situate on the high ridge of the Cordillera, which passes Mexico from S.E. to N.W.

Leaving Queretaro on the 28th of July, and passing through a level and scrubby country with lime-quarries and lime-kilns, I reached at 3 leagues from it a considerable village, called El Opasio. About 1 league before reaching Celaya, which is 9 leagues distant from El Opasio, the country becomes very swampy; but this tract is traversed by a splendid embankment leading to a magnificent stone bridge, the most elegant I have met with in Mexico, ornamented with columns and pyramids bearing the names of the founders.

The town of Celaya, with a population of 10,000 or 11,000, has a fine square, two rich convents, and two cotton manufactures recently established by Don Lucas Alamán, and it was formerly celebrated for its patronage of the fine arts, the convents still exhibiting the evidence of it by their fine paintings.

Among the curiosities of this place is its money, the lower denomination of currency being pieces of soap, bearing on one side the name of the maker, and on the reverse its value (2 clacos, or una quartilla).*

Leaving this interesting town the 31st of July, I rode the same day 26 leagues to Guanaxuato, passing after 10 leagues Salamanca, a melancholy town, and 4 leagues further the Hacienda de Tamascatio; then advancing 5 leagues to the Hacienda de Burras,

* The claco (in commerce called ochava) is the eighth part of a real, which, of Mexican silver, is the eighth part of a dollar. The soap currency described above is worth therefore nearly twopence of our money.—ED.

I found a large and beautiful, though still unfinished, high road, to Marfil, a place about a league distant from Guanaxuato, and 6 leagues from Burras. Here begins the hollow pass, in which Guanaxuato stands, and wherein winds the river, which must be forded several times by a traveller approaching the town.

A visit to the celebrated mines of Guanaxuato afforded me an opportunity of comparing the difference of the systems followed here and in the mines of Real del Monte.

I left Guanaxuato on the 3rd of August, at 4 A.M., and reached the town of Lagos, 26 leagues distant, in 21 hours, riding the whole time on the same horse—no bad proof of the excellence of the Mexican breed. I had to proceed 3 leagues through the above-mentioned hollow, and 2 leagues further on passed through Silao, a small but lively town. From hence 9 leagues to Leon, one of the richest and most industrious towns of Mexico. A great number of Chile plantations occurred on this road. From León to Lagos are 12 tiresome leagues, through stony mountains, barren plains, and narrow defiles, peopled with Cojotes (Jackals). Near Lagos the swamps or lakes (lagos), which give the name to this small town, and a very large and swollen river, were to be forded. On leaving this town next day a mountain of very singular form, called Mesa Redonda, presented itself to the left. Passing again over barren plains and through hollows I saw immense ant-hills, defacing the ground over a circumference of 3 or 4 yards, and reached after 7 leagues some huts, called El Obispo, and 1½ league further a large, well-cultivated plain, strewed with volcanic stones of coarse porous texture and grey colour, but yellow where exposed to the air. The whole ground looked volcanic. Five leagues from El Obispo, and 12 leagues from Lagos, is San Juan de los Lagos, situate in a narrow defile between sterile mountains. This isolated town presents a striking proof of the former wealth of this country. It possesses a magnificent church, ornamented with columns, and bearing the well-merited inscription BASILICA LATERANENSIS. The houses are all painted or decorated with carvings. This place is celebrated for its feria (fair) in December, which lasts eight days, during which many thousands of men, with carriages and beasts of burthen, throng the town, or encamp on the surrounding heights.

Leaving San Juan, I passed a small but good stone bridge over the inconsiderable river which winds through the valley of San Juan, and after 5 leagues reached, in another valley, a wretched looking place, called Calos, quite in ruins, yet having an old church with dome and steeples. After 2 to 3 leagues more, still through barren mountains and passes, came another small place, La Laca, consisting of some huts; then 4 leagues more, and 12 or 13 leagues from San Juan, the Hacienda de San

Antonio, also called Venta de Pexeros, consisting of a farm and a bad mezon or inn. Obliged to pass a very small, but now swollen, river near San Antonio in a canoe, I travelled over a mountainous tract, a very Paradise for sportsmen, as would appear from the multitude of hares we started, a sight I never witnessed before. After some leagues I again found cultivation and a few huts, formed only of large stones heaped together without any cement, nor even with moss to fill the fissures, and covered with straw.

Six or 7 leagues from San Antonio, and within 1 league of Tepatitlan, I was agreeably surprised by discovering on a mountain on the right an ancient pyramid, which, while it agrees with those at Cholula, San Juan de Teotihuacan, but particularly in its form and construction with that of Xochicalco, all which have been described by Baron Humboldt, and the one I had already found near Remedios (of which a description is subjoined), has the interesting peculiarity of being situate in a part of the country wherein monuments of this kind have not been hitherto known to exist, and in a tract over which the Azteks may be presumed to have passed in their migration from the Californias to Mexico.

This pyramid, though inferior in dimensions to those of the Sun and Moon near San Juan de Teotihuacan, yet surpasses them in beauty of form. It has three stories, with a circular mound like a dome on the top, which I had not observed on any other of these monuments. The Indians being questioned respecting it, called it Cerrito de Muctesuma, Montezuma's name being attached by them to any ancient monument of this kind. This pyramid was encased at the bottom with large stones, and there is no doubt that the whole superstructure was once similarly encased, like those at Xochicalco and near Remedios, its interior being formed, as in these two pyramids, and those of San Juan de Teotihuacan, of earth and sand, and not of unburnt bricks, like those of Cholula. When viewed from the top, its form appears octangular, in consequence of dilapidation, but its foundation shows that like the others it was originally quadrangular. The entire upper surface of the pyramid was planted with maize; I discovered another small tumulus not far distant.

Tepatitlan stands on a hill, surrounded by beautiful mountains. The soil, of a peculiar red colour, is extremely fertile. The houses are all scattered over the hill, and, though built only of clay, form with the church an animated picture by their red colour, and their roofs with gable ends, formed of straw or red bricks, varying in this particular from the flat roofs of the eastern part of Mexico. The vegetation also here assumes a more European appearance, and cactus become less and less frequent.

Eight to nine leagues from Tepatitlan, I crossed, by the Puente de Calderon, over a violent torrent, in a wild romantic valley,

celebrated in the history of the Mexican insurrection for the defeat of Hidalgo and his army of 15,000 to 18,000 Indians. The burning of the slain lasted a fortnight. From Puente de Calderon to Sebatlanejo are 2 or 3 leagues. I found near this town, and 2 leagues further on, good bridges built of stone. Another large, splendid stone bridge, El Puente de Guadalaxara, over the Rio Grande, or Tololotlan, where the rebel General Mexia, with 6000 men, was defeated and taken by Cortazar, who had only 2000, brought me soon after to Guadalaxara, next to the capital, the largest and most interesting town of Mexico, with from 60,000 to 80,000 inhabitants, magnificent churches, large palaces, splendid equipages, delicious walks, and, to crown this unexpected splendour, an Italian opera.

From Guadalaxara to Tepic, and still more from this town along the shores of the Pacific, the character of the scene changes, and nature appears more magnificent, but less softened by human interference. From Guadalaxara, through the Pass of La Ratanera, to the Venta del Artillero are 5 leagues, crossing five or six times a small river. To the town of Amatitan (400 families) are 7 leagues. To the town of Tequila (302 families), surrounded by plantations of aloë, with small leaves, for the making of the vino de Tequila, a colourless spirit like whiskey, 3 leagues. The trees here are pine, juniper, and evergreen oak. Then passing a high mountain and defiles, and over ground covered for many miles with large blocks of obsidian, to La Madelena, 5 leagues; where the Indians are mixed with Negroes. Passing the Venta de Mochitilte, 8 leagues, a single wretched house, and leaving to the left the Hacienda de Mochitilte, we came to Plan de Barrancas, some huts in a cavity on a horrid road, among precipices, but romantic, 4 leagues. From the Plan de Barrancas, 4 leagues further, the road ascends about 1½ league, in the wildest and most sublime scenery, to the highest point of the Cordillera; whence the descent to the Sierras Calientes begins. To the town of Istlan (977 inhabitants), in a country still mountainous, but fertile, with many sugar-plantations, 6 leagues. To the town of Ahuacatlan (918 inhabitants), 3½ leagues. Here were immense trees, from 14 to 16 yards in circumference, composed of several stems grown together. The road passes over a large extinct volcano (3½ leagues) to some few miserable Indian huts (mestizos), called Seboruco, or Mal Pays, ½ a league. To the Hacienda de Tetitlan (sugar-plantation), 1½ league; the Hacienda de Sta. Isabella 1¼ league. Passing through the Quartos (prairies between mountains) to the small town of San Lionel, 8 to 9 leagues: to Tepic, the principal town on the coast, with 10,000 inhabitants, 7 leagues. This place is the residence, during the rainy season, of all connected with the unhealthy port of San Blas. I left Tepic the 26th of September, 1838. The road separates, after 5 leagues,

VII.—*Ar*' to the left (W.), and to Mazatlan to the right (N.). *Grou*'genio, 2 or 3 leagues; the country assuming a wild writ' .ich it bears now generally, notwithstanding the luxuriant .on. To some wretched open Indian huts, at a place called O'abrebadero, 4 to 6 leagues: the country swampy, natives in-.olent, swinging the whole day in their hammocks; they go nearly naked, the women only covered with an apron. Beautiful birds, parrots of the largest size, with most brilliant colours. Crossed the swollen Rio de Agua Caliente in canoes, 4 leagues. A tree on the road measured nearly 28 yards in circumference near the root. After 2 leagues more, crossed again in canoes (horses and mules swimming) the Rio Grande, or Tololotlan, which is here very wide, but not deep; and, though but 10 leagues from the sea, only navigable for large canoes. Its banks are generally flat; but the town of San Jago, on the right bank, stands on a little eminence. With the surrounding dwellings it reckons 5000 inhabitants: planting cotton and maize. Between the Rio de San Piedro, 8½ or 9 leagues beyond San Jago, and those of Acaponeta and Escuinapa, a communication exists through the lagoons on the coast, but only for canoes, all these rivers being shallow. To the town of Rosa Morada (4000 inhabitants) 7 leagues. Coffee, citrons, and indigo here grow wild. The animals are small lions and tigers,* in the mountains; wolves, bears, wild boars, and a number of badgers and armadillos. Over the swollen river, near Rosa Morada, to some huts, called Buena Vista, 4½ or 5 leagues. The swamps compelled us to make a circuit of 4 leagues E., by the Rancho del Cojote to Acaponeta, through a wilderness, fording from 20 to 30 small rivers: this increased the distance to 15 leagues; which, by the direct road over San Francisco, is only 11 or 12. Passing, in canoes, the large Rio de Acaponeta, to its right bank, we arrived at the town of Acaponeta: thence, having forded the large Rio de la Bajona, or de las Cañas, which forms the limits between Talisco and Sinaloa, we came to extensive swamps, which we were obliged to traverse circuitously. Rancho de Piedra Gorda is a place shunned on account of its mosquitos. Thence continual swamps extend for 4 leagues. In the town of Escuinapa the houses stand separate, and without order. The Rio de Escuinapa is 4 leagues further. The country now grows more open and stony; and exhibits a scarcity of water, which, on this whole coast, has a bitter taste like that of Pillna, but without its virtues. To the very shallow, but mile-wide, Rio del Rosario, 7 leagues. On its right bank stands the town del Rosario, between mountains: the gold and silver mines, formerly considerable, are no longer worked. El Rosario appears to be the

* By lions we must here understand the puma or couguar; the American tiger is the jaguar, better known as the great panther.—Ed.

ɔe York is
centre of the trade between the port of Mazatlan and t·ıl, as they Its population exceeds 5000. To the Rancho of Po·re; they leagues; to Casa de Teja 4 to 6 leagues; to El Rincon 2 l·uinea: to La Canita ½ a league; to the Presidio de Mazatlan, S.W. broad streets and large buildings, and more than 1500 inhab·ı ants, 4 leagues. The wide and rapid Rio de Mazatlan is forded ½ a league further on: then the road continues, 5 leagues, through a mountainous and sterile country, without water: then over downs, and by lagoons fordable at high water, after 5 leagues more, bring the traveller to the Puerto de Mazatlan, now the most frequented port on this coast, but dangerous in the rainy season and two months after it, from June to December. I witnessed the cordonazo (hurricane) of the 1st of November, 1838, when all the ships in the port, 9 in number, and many lives, were lost.

On the occasion of visiting the celebrated church of Los Remedios, near Mexico, I was informed by the sacristan, of whom I inquired for Indian antiquities, that a mountain in the neighbourhood of Remedios bears the name of Cerro de Muctesuma, and that the ruins of this emperor's palace are still visible on it.

Though much inclined to doubt this assertion, from having never before heard nor read of so interesting a monument in the immediate vicinity of the capital, I still lost no time in visiting the place indicated, accompanied by two Indians.

Having reached, after ½ an hour's walk, the foot of the mountain, the outline of which already confirmed the statement, and crossed a rivulet, I found myself on a spot which, from the number of dispersed stones, fragments of broken earthen vessels, and obsidian, might, in reference to Mexican history, be truly called classic ground. The whole mound, or rather pyramid, of about the same size as that of Xochicalco, was divided entirely into steps or stories, each 3 or 4 feet high, and which had formerly been all faced with stones.

Having ascended about two-thirds of the pyramid with some difficulty, the prickly nopal impeding the passage, I discovered the considerable remains of a castle, built of stone, and in one part of it a large flat stone, about 6 feet in height, ornamented with a carving of about 3 feet in diameter.

The view from the top of the pyramid, which terminates in a square platform, is, without exception, the most beautiful and extensive near the capital; and the circumstance of its being so near the latter place might lead to the question whether the Azteks, who built Mexico, have not had a share in the erection of these monuments which are generally ascribed to the Toltecs.

VII.—*An Account of a Visit to Kisser, one of the Serawatti Group in the Indian Archipelago.* Extracted from a Letter written by G. W. Earl, Esq.

Our passage through Torres Strait by the inner route was most interesting, for we ran close along shore from Break-sea Spit to Cape York, and thus had an opportunity of seeing more splendid scenery than I had ever expected to behold in Australia. The land between the Northumberland Islands and Cape Tribulation bears a great resemblance to the country about Rio, in South America: the summits of the mountains are rugged, and of singular appearance; while in the lower parts and the valleys the luxuriance of the vegetation gives incontrovertible evidence of a fertile soil. This part of Australia is certainly superior to any that I have yet visited, yet it will probably be the last colonized; for the prevalence of the south-east trade-winds throughout the year will render the navigation difficult until steam is more generally adopted in these regions than at present. By the bye, there are individuals here who are anxious to set on foot a steam communication with Hindostan. They propose that the southern route, round Cape Lieuwen, be adopted; but there can be no doubt that this will speedily be altered for the smooth-water passage through Torres Strait, particularly if Port Essington fulfils our expectations. To the northward of Cape Tribulation the coast suddenly alters its character to one of great sterility; but, perhaps, the beauty of that which we have been looking on for several days previously, leads us to form a worse opinion of it than it deserves. We remained at Cape York two days, and took possession. We did not penetrate inland, for the thickness of the underwood prevented us. Our short stay sufficed, however, to convince us that, should a settlement be contemplated on that coast, there would be no difficulty in finding eligible situations. The natives were seen, but we had no communication with them; they did not appear to differ from those to the southward. When passing the N. side of Hammond's Island we saw an encampment of natives in a small bay, from which two canoes put off under sail, the people in them holding up pieces of tortoise-shell and pearl-shell, but we did not heave-to for them. These canoes, which were large and well managed, perfectly answered Flinders's description of those of the islanders of Torres Strait. This renders it probable that the people we met with here were natives of some of those islands, or perhaps even of the S. coast of New Guinea, who had come here to trade with ships passing. The trade in tortoise-shell with the islands in Torres Strait is now considerable: the 'Essington' schooner, which passed through a short time before us, obtained between 3 and 4 cwt. during a stay

of a few days among the different groups. When Cape York is taken possession of, these islanders will be found useful, as they are bold navigators, and have a great taste for commerce; they now carry on an intercourse with the S. coast of New Guinea: and, if this unknown part yield as valuable products as the S.W. coast, we may derive considerable advantages from the promotion of such intercourse. This, however, is a point of minor importance, when the superior value of the trade with the Arafura* Islands is considered. When Port Essington shall have been well established, the occupation of this part will probably soon follow.

We arrived at Port Essington on the 27th of October, and found the 'Essington' schooner, from Sydney, at anchor off Point Record. You will have heard of our first proceedings there from Sir Gordon Bremer's letters; I will therefore at once proceed to speak of the Serawattí Islands, which I had soon an opportunity of visiting. As the 'Britomarte' had not yet arrived, an engagement was entered into with the master of the 'Essington' for supplying the settlement with stock; and Sir Gordon dispatched me in her to open a communication with the people of the Serawattí Islands, from whom it was intended to procure a supply.

We sailed on the 1st of November, before the site of the new settlement had been decided upon; and, owing to the lightness of the easterly monsoon, did not reach Kisser until the 7th, on the evening of which day we were close under the S. side of the island. It certainly presented a most picturesque appearance: the summit of every hill was crowned with a village of neat thatched houses, shaded by large trees; each village being surrounded by a wall formed of stones piled on one another to the height of about 8 feet. The steep sides of the hills exhibited numerous herds of buffaloes, goats, and sheep; while between the hills we occasionally had a glimpse of the interior, which appeared to be in a high state of cultivation. It was dark before we reached the anchoring ground, laid down by Kolff, off the S.W. extremity of the island; but, after several attempts, and causing great alarm to the crew of a *prahu* from Banda that was anchored there, we succeeded in finding the spot, and brought up on a patch of rocks, in 10 fathoms, three-quarters of a cable's length from the shore, to which we made fast a warp. During this (the S.E.) monsoon the anchorage here is safe, but it must not be attempted from the middle of November to April. A gun we had previously fired brought off the schoolmaster and some other natives of the island, from whom I received the agreeable intelligence that a Swiss missionary, in the service of the Dutch Missionary Society, had resided here for several years. No vessel had visited the island

* Or Harafúra.

for three years previous to our arrival. A Dutch brig-of-war was the last which had called there. At daylight, Mr. Bïer, the missionary, came on board, and I accepted his invitation to breakfast on shore. On landing we found the raja and a number of people collected on the beach, with hogs, sheep, fowls, poultry, fruits, and vegetables of all descriptions. They were even more anxious to dispose of the goods than we to purchase, so that the business was soon settled: and, after half an hour's conversation with the raja, I accompanied Mr. Bïer to his house, leaving the master of the schooner to carry on the bartering.

I have been rather minute in this account of my first interview with these interesting people, but I think I may safely continue without tiring you. One of them, named Shadrach Philippus, is now at my elbow writing to the Raja of Kisser an account of the wonders he has seen here at Port Essington, a ship being about to sail for the islands. He was one of many young men who offered their services to me on my expressing a wish to take one with me, and I have never had cause to regret bringing him away, for during my entire residence among the islands in the Indian Archipelago, I have never met with a native who showed more docility and intelligence. He has already acquired considerable proficiency in our language, in which he was much assisted by being a general favourite both with officers and men. One of my chief objects in bringing him to Sydney has been, that on his return to the islands his account may tend to counteract some of the scandalous reports concerning us which have been spread by the Dutch, and which very nearly caused the loss of all our lives at one of the less civilized islands. The Kisser people have already seen through the artifice, and now look up to us as they formerly did to the Dutch; indeed from us they have received nothing but benefits, while from other quarters they have only met with extortion.

Kisser, or, as it is sometimes called by the inhabitants, Makisser, is about 18 miles in circumference: it is composed of a number of hills varying in elevation from 300 to 800 feet, many of which have a rugged and irregular appearance, while the numerous chasms which traverse the island render it evident that it has been subjected to some violent convulsions of nature: indeed many of the inhabitants remember an earthquake which shook down their stone walls and did much other damage. As nearly as I could judge, this must have occurred about the same time with the violent eruption of the Timboro Mountain in Sumbáwa. The valleys possess a fertile soil, and these, with the sides of many of the hills, produce rice, sugar-cane, yams, sweet potatoes, tobacco, cotton, and many culinary vegetables, scarcely an available spot being left uncultivated. The chief fruits are mangoes,

bread-fruit, melons, oranges, lemons, plantains, &c., together with many that I have not met with before.

Kisser contains between 7000 and 8000 inhabitants, more than 1700 of whom are Christians of the Dutch Protestant creed; about 500 of the latter are descended from the Dutch who formerly resided on the island: these last reside in villages of their own, and rarely intermarry with the other inhabitants, although on the most friendly terms with them: this may arise from the circumstance that the natives of the island of unmixed race are divided into castes, the chief of which is the Marna, from which alone their chiefs are elected. This caste is more numerous on Kisser than on any of the islands to the eastward, in which the same division of castes exists; that is to say as far as Bábá, beyond which I had not opportunities of extending my observations, but I have reason to believe that the same system extends throughout the Arafura Islands. The Buah, or second class, composes the bulk of the population. Individuals of this class sometimes intermarry with the Marna, but unions of this description are not looked on with a favourable eye. The third and last class consists of the Budah or slaves, together with the offspring of those who have been slaves. I may mention here that a slave-trade is carried on among the islands, the source whence the slaves are derived being chiefly Tímór Besar, or Great Tímór. I believe that their condition is improved by being removed to these islands, but still the system deserves censure.

Two dialects are spoken on the island, which differ so much that individuals are often met with in the island who cannot understand one another's language. I send you a short vocabulary of that spoken by the bulk of the inhabitants, which I have taken from a more extensive one, which I trust soon to forward to you; it differs greatly from the Malay, and is spoken with a guttural pronunciation. The other dialect is used only at Wairatu and a few subordinate villages, situate on the S.E. extremity of Kisser. This, I find, bears a close, indeed almost a perfect, resemblance to the dialect of the natives of the N.E. end of Great Tímór, so that the people of Wairatu probably emigrated from that island, although the event having occurred long ago is not remembered. The people of Wairatu are subject to the same raja as the others, but the difference of language prevents an absolute cordiality between them: in fact they differ in many particulars.

The form of government in this island is rather singular. There are two rajas, brothers, the elder of whom undertakes the superintendence of the descendants of the Dutch, while the other rules the natives. Each village is under the immediate rule of an orang kaya, or an orang tua, who is always of the Marna caste,

and a Christian. To these are intrusted the adjustment of minor differences. The chief punishment for criminals is putting their feet in stocks, and exposing them to the gaze of their fellow-townsmen. Capital punishment is unknown; but should a murder occur (which has not been the case for many years), I have reason to believe that the friends of the deceased would be considered as justified in taking the life of the murderer. From what I saw of the administration of justice, it appeared to me to resemble the control exercised by a father over his family. Kisser is the only island of this group in which there is a raja, or head chief. In all the others each village is independent, and consequently jealousies and quarrels arise, often ending in wars, which, however, are rarely attended with much bloodshed. Muskets are used in warfare throughout the group; but the people are so unskilful in the use of them, and the ammunition they use is so bad, that a battle frequently ends without loss of life, or at most with the death of only one or two. These quarrels, however, have the effect of rendering the inhabitants of the islands in which they take place turbulent and disagreeable. At Lettí, in particular, we found this to be the case. Had the chiefs of the different villages any supreme authority to which to appeal for a decision of their disputes, I am convinced that the case would be materially altered.

At the close of the year, when the land, which has been hardened by several months of drought, becomes moistened by the rain, the inhabitants commence turning up the ground, which they do by means of wooden spades; for although they have abundance of buffaloes, which, as we have proved at Port Essington, may easily be broken in for harness, the people of the islands never use them for draught. During the whole of the rainy season, and the first part of the S.E. or dry monsoon, the inhabitants are employed in agricultural labours; but towards the close of the monsoon, when their crops are all in, they get ready their prahus, which have been hauled up during the remainder of the year, and make trading voyages to the neighbouring islands; every man is therefore both an agriculturist and a seaman. This period is looked forward to as one of pleasure, and those even who have little business to transact make voyages to visit their friends in the neighbouring islands.

Kisser, owing to the superior stability of the government, is the resort of the traders from Macassar, Amboyna and Banda. It is therefore the emporium for foreign goods, to obtain which it is visited by the natives of the islands to the eastward, while the people of Kisser themselves resort to Wetter and Great Tímór, where the inhabitants are little acquainted with navigation. During our stay among the islands, which happened to be in

the voyage season, we saw at least 200 prahus passing from island to island. Some of these were of 40 or 50 tons burthen. The goods imported at Kisser are chiefly cottons, iron, earthenware, muskets, gunpowder, spirits, brass-wire, hardware, beads, &c.; the exports being tortoise-shell, bees'-wax (the greater portion of which is obtained from Wetter), rice, cotton, native cloths, tobacco, sandal-wood, Indian corn, and live-stock of all descriptions. Spanish dollars and Dutch gold ducats are taken by the natives in exchange for their goods; but money is rarely used in commerce among themselves.

The women manufacture considerable quantities of cloth from the cotton produced on the island, the greater portion of which is disposed of to the people of the neighbouring islands. The yarn is dyed before the cloth is manufactured. The red is produced from the *Morinda citrifolia;* the blue from a small plant, which is common also at Sydney, and called "native indigo;" the yellow dye is obtained from a wood of that colour; the first and last, with, perhaps, the indigo also, being indigenous at Port Essington. The men of Kisser show considerable skill in working gold and silver ornaments, and in turning ivory, a considerable number of elephants' teeth being imported. I guessed that Kolff was mistaken in supposing that the natives only sought them to keep as curiosities. I have seen siri-boxes and other trifles made with such neatness as led me to doubt whether they could have been executed with the simple lathe possessed by the islanders. This art has not, I think, been introduced by foreigners, for the pagan natives alone practise it.

I must now say a word about the people themselves. They are of the middle size, and generally very well made; colour, dark brown; hair, generally straight, but often slightly curled; features by no means so broad as those of the Malays, indeed many might pass for Europeans, were it not for the darkness of their complexions. I am now speaking of the aborigines. Those descended from the Dutch are often as fair as Europeans, and might readily be mistaken for them, particularly as they adopt the European costume on festive occasions. Shadrach, who is one of the aborigines, is now sitting for his portrait. As far as person is concerned, however, he is not a favourable specimen of the natives. We left Kisser, after a stay of two days, with a very favourable opinion of this interesting people, and I never had the slightest occasion to alter it during the two visits I subsequently made to the island. Any English ships that touch there will certainly meet with every attention. Indeed, now that the island is known, I doubt not that it will often be resorted to by our whalers. One touched there and obtained abundance of refreshments about two months after my first visit, and probably this

little island, which was formerly unvisited by a ship for periods of three years' duration, may now see one every week. There is little fear of the islanders being short of supplies, as their superior wealth enables them to command the produce of the neighbouring islands. During our first short visit, a portion of the goods received from us were on their way to Tímór and Wetter before we left the island.

The Christians of Kisser are all of the Calvinist persuasion, there not being a single Roman Catholic in the island, although there are many at the Portuguese town of Dilli on the adjacent island of Tímór. Neither are there any Mohammedans, those who do not profess Christianity being pagans. In the Christian churches the service is performed in the Malay language, the Scriptures having been translated at Amboyna many years ago. Small fines are imposed by the elders on those who fail to attend at church during several consecutive Sundays. I never saw a more attentive congregation than that assembled in one of the churches on Lettí; the presence of an European stranger, where one is so rarely seen, scarcely diverting their attention for a moment. The entire population of Kisser might be converted with facility, did not the missionaries object to baptising any adults but those who have undergone a long probation, and have acquired a competent knowledge of the Scriptures. Many pagans who have not resolution to surmount these difficulties themselves, send their children to school, that they, at least, may be Christians. Thus there are many families in which the parents are still unconverted, while their sons and daughters, residing under the same roof, are members of the Christian church.

The Dutch introduced Christianity into these islands about two centuries ago, when they had small military posts on many of them to enforce the monopoly of the spice trade. These were withdrawn towards the close of the last century, and the natives, left to themselves, had but little communication with Europeans, until our attempts to colonise Melville Island and Raffles Bay, directing the attention of the Dutch to this part of the Archipelago, missionaries were sent to the three principal islands of the Serawattí group. The Tenimber and Arrú Islands are without missionaries. Many of the natives of the latter group still profess Christianity, but no traces of it are now to be found in the Tenimber Islands; indeed, I fear the Mohammedans from Ceram have made some converts there. Wadia, the northernmost of the Arrú group, is almost entirely peopled by Mohammedans, and there are many on the Kaï Islands, which are also frequently visited by the Ceramese.

From Kisser we proceeded to Lettí, Moa, and Lakor, among

which islands we remained a fortnight. Were I now to give you a particular account of these islands, it would swell this letter to too large a size. The people differ little in their customs or appearance from the natives of Kisser, but they are far inferior to the latter on all points connected with civilisation. I called meetings of the chiefs on all these islands. The people become more barbarous as you proceed eastward. At Lakor, the limit of our voyage in this direction, the schooner was very nearly cut off by some people of Bábá, who happened to be there, many of whom had taken an active part in cutting off the "Lady Nelson." The missionary of Moa and myself (who had been staying a few days on Moa) opportunely arrived on board from an adjacent island just in time to prevent it. The crew, a set of men from Sydney, had been made intoxicated by drugged liquor, and had we not come on board from Moa, where we had intended to stay the night, every soul would have been murdered before morning.

These islands abound in stock, but as some delay would have been necessary to obtain from them all we wanted, it was deemed advisable to return to Kisser. So rapidly was this business transacted at the latter island, that 48 hours after our arrival there we were under weigh for Port Essington, with 20 bullocks, 120 sheep, 60 pigs, a number of fowls, 3 tons of yams, with fruit, cocoa-nuts, plants, &c., all of which had been purchased by goods which cost at Sydney less than 50*l.* sterling.

With respect to Port Essington, my expectations, sanguine as they were, have been more than fulfilled. The climate is superior to any tropical climate I have yet had experience of; indeed it only differs from that of the more southern parts of Australia in being warmer. The soil is good, water abundant, and the harbour, as may be learned from Mr. Tyers's excellent chart, is one of the best in the world.

The fleet from Macassar arrived on our coast in December, but not knowing that we were at Port Essington, the Malays passed on for the Gulf of Carpentaria. On their return six prahus carrying nearly 200 men came into the harbour; and, finding it in our occupation, they erected their curing-houses close to us, delighted at the security our presence afforded them, as they were now enabled to send all hands to fish, whereas formerly they were obliged to leave many to protect their establishments on shore. They remained here a month, during which period they behaved remarkably well, not giving us the least trouble. I obtained considerable information from the chiefs (one of whom in particular was a very intelligent man) concerning the coast to the eastward; but nothing that would be interesting in a geographical point of view, as the prahus go direct from one station to another (there being generally islands near the coast), without attempting to penetrate

into the interior through the numerous openings that occur. The Bughis speak very highly of the natives of some parts of the Gulf of Carpentaria, with whom they drive a brisk trade. They describe these people as being far more civilised than any other on the coast.

Nearly every prahu on leaving the coast takes two or three natives to Macassar, and brings them back next season. The consequence is that many of the natives all along the coast speak the Macassar dialect of the Malayan language. A few have been converted to Mohammedanism; one of these, Caraday, a chief of one of Goulburn's Islands, visited us soon after our arrival at Port Essington. He had been circumcised, and refused to eat pork.

The natives of the N. coast differ little from those of the southern parts of Australia, except in being superior in personal appearance. Their intercourse with the Bughis has given them some idea of commerce, and the former obtain large quantities of tortoise-shell from them in exchange for iron, rice, and old clothes. We have been on excellent terms with them throughout our stay at Port Essington.

I send you a short vocabulary of the language spoken by the bulk of the inhabitants of Kisser:—

	Kisser.		*Kisser.*
Ashes	A'pu	Darkness	Naūmétik
Anger	Náhan	Dew	Wărenwúhi
		Dust	Moöl
Bay	Hólok	Dwarf	Ria-tetéūl
Body	Kemen	Dumb	Akukur
Beard	Wehin-wulu	Deaf	Rohor
Back	Koörn	Daughter	Upian-manek
Breast	Iróhan	Door	Nika
Belly	Konoïn		
Bone	Ruhúrni	Earth (the)	Enimo, Noha
Blood	Raärn	Earthquake	Ruru-ai
Blind	Makan-tok	East	Kimur
Bald	Ulupór	Eye	Alakan
Brother	Molwáli-anúlu	Eyebrow	Makan-wulu
Board or plank	Awáhan	Eyelid	Makan-ihorn
Box or chest	Opaláhat	Ear	Kiling
Basket	Ipun	Elbow	Liman-ihu
		Entrails	Konoine-rarama
Cold	Rin		
Cloud	Kákam	Fire	Ai
Charcoal	Aren	Flame	Rob-Lear
Current	Hari	Fuel	Au-ai
Calm	Namilína	Forehead	Leren
Cape	Loron	Face	Oin-makan
Cheek	Muman	Finger	Liman-rahan
Chin	Wéhin	Foot	E'hin
Cough	Hor	Flesh	Maheine
Clay	Enimo-memen (red earth)	Fever	Nakanhir
Child	Ria-talahan	Father	Bapa

	Kisser.
Father (step)	Bapa-turan
Garden	Ápake
Grandfather	Opai
Heat	Mana
Hillock	Wohor-aän
Hair	Muruko
Head	Ulu-wahku
Hand	Liman
—— (right)	Liman-awahan
—— (left)	Liman-iyak-iyak
Heart	Akin
Humpback	Kohoro
Husband	Mohoni
House	Romé
Island	Nohan
Joy	Raram-nodi
Knee	Ehin-koörn
Light	Rob
Lightning	Litar, litar maki
Lip	Nibikan
Leg	Ehin-laluan
Lame	Tehku
Moon	Wali
Mountain	Wohor
Mankind	Ria
Man (a)	Ria-mohoni
Mouth	Nuran
Milk	Huhu
Mad	Seri-seri
Mother	Ina
Step-Mother	Ina-turan
Mat	Pikír
Musket	Ilik
North	Rahó
Nose	Iruni
Neck	Kelan
Nails (finger)	Liman-makan
Nephew	Molwali-anan
Niece	Yaonaro-anan
Nails (iron)	Rohé
Plantation	Ápaké
Pillow	Luni
Plate	Pian
River	Oira-lapi
Rain	Ohkon
Rib	Rusan
Sky	Aam
Sea	Kahei
Sun	Lear
Star	Kaleor
Sunrise	Lear-inha
Sunset	Lear-inhélim
Smoke	Ai-mahow
Sparks	Ai-lear
Storm	Ané-lap
South	Karan
Swamp	Taäl
Stone	Wahku
Shoulder	Kawahal
Skin	Hūlikin
Sorrow	Nāhaléher
Stammer (to)	Ahak
Silly	Kanar-woroin
Sister	Yaonaro
Son	Upian-mohoni
Sand	Totlé
Stool or bench	Awahan
Sword	Rahai
Spoon	Hūrūa
Thunder	Nohan, nuhur
Tongue	Naman
Teeth	Nihan
Thumb	Liman-lapan
Thigh	Ehín-lapan
Thatch	Kawar
Village	Lehké
Valley	Kan
World	Noha
Water	Oira
—— (fresh)	Wowahan
—— (sea)	Oira Kahei
Well (a)	Oira-makan
Wind	Anó
Whirlwind	Turuhe
West	Warak
Woman	Ria-mavek
Waist (the)	Heran
Wound (a)	Noer
Wife	Hohon
Window	Owoli

On a comparison of this with Mr. Crawford's Vocabularies (Indian Archipelago, vol. ii. p. 120), it appears that the language of Kisser is a remote dialect of the Malayan language.—Ed.

VIII.—*The Himyaritic Alphabet discovered, and portions of Himyaritic Inscriptions deciphered:* in a Letter from Professor GESENIUS to the Secretary of the Royal Geographical Society.

RESPECTED SIR,—I take the liberty of sending to you and to your honourable Society the alphabet of the Himyaritic writing in the inscriptions discovered by Messrs. Cruttenden, Wellsted, &c., and communicated to me through the kindness of the Society—such as it results from my investigations—together with the explanation of a number of words and some passages of the inscriptions. As I am about to publish an account of my process of deciphering in a short "Memoir," I should be very happy to learn if, since the publication of those inscriptions in vol. viii. of the Geographical Journal and in Wellsted's Travels, any other ancient monuments of the same kind have been discovered; and, if such be the case, to obtain a copy of them, in order that I may establish and complete my system as much as possible.

I am, &c.

Preliminary Remarks on the Himyaritic Writing.

Notwithstanding that the alphabet published by Roediger, from an Arabic MS., is incorrect, yet many letters of the inscriptions agree with it even in meaning; others agree with the old Ethiopic writing of the inscriptions published by Salt and Rüppell. The writing runs from right to left; the words, and even the *literæ serviles,* are separated by a vertical stroke | , or ·|, or ··|; the periods by ··|··. The vowels are not marked.

Alphabet.

א ב ג ד ה ו ז ז ;

ח. ח خ ט ط ظ י כ ל מ

נ ס ע. פ צ ض ק. ר ש ש ת

Words and passages in the inscriptions at Ṣan'á.

No. 1, line 1, בת אלה
House of God.

Line 2, ל אלהת
To the goddess.

Line 4,
חמש מאתם
Five hundred.

No. 2, line 6,
אלבבחם
Their hearts.

Line 7,
(اصنام) צנמם
The images.

No. 4, line 1,
אב ולכרב בנחם
Abulkarb has built them.

Line 2,
ראש וצמורם
The heads of the associates.

In the inscriptions in Wádí Ghoráb and Naḳab el Ḥajar.

(He built)
ממברת לנא מיעת אל עד שברמו
(Erexit)—Fregit eas hostium ira nobis arces.

עתל ייהז ביתבליל
Noctu domum occupavit Athil.

The longer inscription in Wellsted's Travels, vol. ii. p. 424.

Line 9,
וארץ חמירם
Himyaritarum terræ (gen.)

Ibid.
מלכ המירם
Himyaritarum Rex.

Line 3 and elsewhere frequently, (ימנ), Yemen.

Abulkarb, spoken of in the inscription at Ṣan'á, was the thirty-second king of Ḥimyar (vide Pococke, Spec. Hist. Arabum, p. 55-60). The dialect of these inscriptions inclines much to Ethiopical forms, using, for instance, H as the sign of the genitive. In some forms it agrees with the Hebrew, as in making the plural in *im* instead of *în*, Ethiop. *ân*. My little "Memoir," when ready, shall be immediately sent to the Society.

Halle, 14*th June*, 1841.

IX.—*A Journey from Baghdád to the Ruins of Opis, and the Median Wall, in* 1834. By John Ross, M.D., attached to the Residency at Baghdád. (See the Map of the Route to Al Ḥadhr.)

June 15*th*, 1834.—At 4 h. 45 m. A.M. we left the city of Baghdád by the Mu'ahdhem (lofty) or northern gate, and kept a course from N. to N. ½ E. over a perfectly level desert. In ½ an hour we saw the tomb of Moḥammed Sakrán, bearing N. by E. ¼ E.; at 6 h. 5 m. passed the small mounds of Tauríj on our left; at 6 h. 17 m. passed a small mound; and at 6 h. 30 m. two other larger ones, 'Aḳar-ḳúf bearing W.S.W., Sakrán N.N.E. There were numerous little mounds on the plain to our right, and a set of large ones at a distance called Buubí Shám.* At 7 h. crossed an ancient bed of a canal, and in a few minutes another, both running nearly E. and W.; at 7 h. 30 m. another; at 7 h. 50 m. a few mounds to our left; at 8 h. 10 m. a large clump of mounds called Bedrán, covered with broken bricks and pottery, seemingly the bifurcation of a canal, one range running S.W. ¼ S., the other W. ¼ S.; from the highest one, 'Aḳar-ḳúf bore S.W. ¼ W., Sakrán N.E. ½ N. The tomb of Loḳmán E.N.E., Jedídah N. by E. At 8 h. 45 m. we had some mounds about ⅓ of a mile on the left, also called Bedrán. At 9 h. we came upon the khaur† or marsh of Rashídíyah, occasioned by the Tigris's overflowing its left bank; we kept along it for 20 m., till, on getting to an ancient canal called Ráhíyah, we found the marsh stretching E. inland, and were obliged to march along it in that direction, keeping the extensive ruins of Sakrán and Loḳmán on our right. I visited these on a former occasion, and may here mention that they are of very great extent, evidently the site of a considerable city: the country for many miles around, is covered with broken bricks, pottery and fragments of all sorts; sepulchral urns are seen scattered about in all directions as well as earthen sarcophagi, shaped exactly like European coffins at the present day. I myself picked up an earthen figure of a sheep, and a silver Sasanian coin, both of which are in Col. Taylor's possession.

At 11 h. 45 m. we got round the marsh, and continued in a northerly direction through grass nearly a yard high; then N.N.W. At 2 P.M. got to the Khális‡ at Dokhálah, and finding the canal dry and the village deserted, we turned our faces southwards along the bank of the Tigris, and in less than half an hour reached Ḥuweïsh, where we halted. This was, a few years ago, one of the most

* Gates of Syria.—Ed.

† Vulgarly pronounced Khór.—Ed.

‡ Khális, which the author seems to consider as the name of a canal, is a district between Baghdád and the River of Nahrawán, which contained thirty villages.—*Jehán-numá*, p. 462.—Ed.

flourishing villages in the Khális, but is now, from plague, and oppression of the government, reduced to a few miserable huts.

June 16*th.*—We passed a miserable night, owing to mosquitoes; and at 3h. 50m. A.M. mounted and retraced our steps to Dokhálah, then kept N. over a country which must lately have been very populous, as the marks of cultivation and canals for irrigation are very numerous. The villages of the Khális are stretching away on our right, but my people tell me that they are all, like Ḥuweïsh, nearly deserted. At 4 h. 30 m. kept edging to the right, and soon afterwards N. by E. over fine soil, but the canals were all dry and neglected. At 5 h. 55 m. we passed the large village Jezání, which has a caravanserai outside of it. W. of it, at no great distance, an old mound is seen, called Till Ahema (?). We now kept N. ¼ E. over the same kind of country, and at 6 h. 25 m. had a tomb in a clump of date-palms close on our left. At 7 h. 15 m. we passed Yangíjeh,* the first Tátár-station from Baghdád. We then altered our course to N.E., and at 8 h. 20 m. halted at Khán Nahrawán, built between two cuts from the Khális, running nearly N.W. and S.E. From the top of the Khán the village of Dálṭawá† bore S. by E. ½ E.; Hebhet, S. ½ W.; Yangíjeh, S.W. ¼ S.; Sa'díyah, S.W. ½ W.; Sindíyah, W. by N.; a ruin called Neï, N. by W. ¼ W.; the tomb of Seyyid Turkán, E. ½ N. Close under the Khán, on its northern side, there is a very broad and deep ancient canal, which having left the Tigris above Sindíyah, runs from N.W. ½ W. to S.E. ½ E., is now dry and called Nahrawán, in common with the great canal a little way N. of it, or rather they are called Nahrawán 'Aïn, and I am told run parallel (at a very trifling distance) to the Diyálah, below Baḳúbá. All the old beds crossed yesterday are derived from this southern one, as are also several others between Baghdád and the Diyálah.

I never saw the effect of irrigation better marked than in this day's march: as far as the branches of the Khális are carried on both sides of the parent trunk, all is green, and the soil remarkably rich, while beyond it, on either side, there is nothing but arid desert, entirely destitute of any vegetable production.

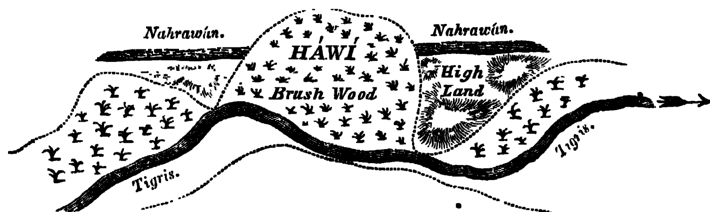
At 4 h. 15 m. P.M. we again mounted, and passing onwards about N. by E., over a country cut into deep ravines by rain, came, in half an hour, to the real Nahrawán, which runs here from N.W. ½ N. to S.E. ½ S., and is 108 of my long paces in breadth: I crossed and recrossed it, and in many places, in the ruts on both sides of it, saw pottery and bricks At a short distance ahead, it is seen entirely cut away by one of the deep embayments or háwís‡ (as

* Yeñícheh (little New-Town), according to the Constantinople pronunciation. It is a Turkish name.—ED.

† Properly Dál-ṭabán (Bare-foot), a Turkish word, the nick-name of the Grand Vezír of Muṣṭafá II.—ED.

‡ Háwiyeh, a gulf.—ED.

the Arabs call them) forming the valley of the Tigris, which river is now very considerably below the level of the surrounding country. We then kept more westerly, and at 5 h. 20 m. touched the elbow of the embayment, which is covered with tamarisks; while on the high land not a vestige of vegetation is to be seen. The Nahrawán is again seen just opposite to where it was cut away—thus:



The bed of the river is at present much deeper than the bed of the canal ever could have been.

From the elbow, we kept N.W., and at 5 h. 40 m. came to the Nahrawán again, which keeps exactly the same course. Thinking it looked broader here, I got off and paced it again, when I made it 130 paces. As it was now getting late in the day, we struck off W. ½ S. for a camp of Arabs which we saw, and we reached it at 6 h. 10 m.: they were of the tribe Bení Temím, and gave us welcome and a good dinner.

The Arabs got into a hot dispute about the Nahrawán, some swearing it goes straight to Ḥawízah and the Cha'b* [Ka'b] country, others that it crosses the Tigris near Kút-el-'Umaïráh,† and then runs across the Jerjerá opposite to Súḳ el Shuyúkh. They then, as usual, began to abuse the Turkish government, swearing and wishing God would send the English, or that any other nation would come and deliver them from their tyrants the Turks. One old fellow called Ḥájí Dáúd said he had been to Baṣrah, and must be allowed to have some knowledge of the English; and he accordingly related many wonderful stories in their praise, and talked of their ships with 200 guns and 2000 men besides horses, and God only knows what else, always appealing to me for the truth of what he said.

The encampment was on a point of high land just over the river, Sindíyah bearing S.S.W., and Neï N. ½ E.; the latter is a square ruin of the Sasanian age.

June 17th.—At 4 h. A.M. we started, going N. for a few minutes, then having descended into a háwí, passed on through

* See "Niebuhr's Description of Arabia," p. 319. "Travels," vol. ii. pp. 184, 227.—Ed.

† Perhaps Kút-el-Ḥamrá. 'Umaïrah, which is given on Mr. Rassám's authority, seems doubtful.—Ed.

tamarisk thickets between N.W. and N.N.W. In many parts of this tract the Arabs have patches of cultivation; the Nahrawán is cut away by this háwí also. At 5 h. A.M. we again ascended the high bank, and found the Nahrawán about ¾ of a mile to our right: however it was only a narrow tongue of land, and in a few minutes we went down into another háwí exactly similar to the last, and kept N.W., the canal having been carried away as before. At 6 h. we again ascended; the high land is very much cut up by ruts. Neï now bore E. ½ N.; and some mounds were seen a good way N. of it. The valley of the Tigris is here, I should think, 4 or 5 miles in breadth. At 7 h. we again descended, and crossed a háwí for 20 m., then ascended, and went on in the bed of the Nahrawán for 15 m., when we came upon the valley of the River ''Adhem:* its valley, like that of the Tigris, which it here enters, is very broad, and covered with stunted tamarisks. The river itself winds through the middle, is about 15 yards broad and 20 inches deep, and at present runs over a most tenacious sort of mud, which takes the horses up to the girth; its course appears to be from N. by E. In the valley on the right bank of the stream, stands a curious square mass of the original soil, looking like a mud tower. We crossed the valley, and at 8 h. 7 m. ascended, and again entered the Nahrawán; the bed of the latter is as high above that of the ''Adhem as it is above that of the Tigris; and it is quite evident that when water flowed in the Nahrawán, none could have existed in the ''Adhem; in fact, when the band (barrier) at the exit of this river from the Hamrín range was in existence, no water could possibly have got into its bed, all must have gone into the Batt and Rathán; and what remained, after the irrigation of the countries intersected by these two canals, was by them thrown into the Nahrawán itself.

From the ''Adhem the canal runs N.W.; I kept on its bank next the Tigris; in about half an hour, sprinklings of bricks and pottery began to appear. At 8 h. 55 m., in the bed of the canal, we came upon five platforms of large kiln-burnt brick-work, level with the surface: the Arabs call them kuberá (or tombs), but they are evidently foundations for the arches of a bridge; and on the western bank of the canal, immediately opposite to them, there is a high knoll called Tappah Muhassil;† and close under it, a branch seems to have left the trunk. At 9 h. 5 m. we came to the spot at which the two grand arms of the Nahrawán unite; and each seems as large as their united beds: the eastern is evidently the principal one, as it keeps its own straight course N.W. ¼ W., while the other enters at an acute angle, coming

* *i. e.* The Largest River: ''Adhem, or ''Azem, is an epithet, not properly a name. —ED.

† 'Collector's Hill;' a modern name, as the Turkish word *Tappah* or *Tepeh* shows.—ED.

from W.N.W. The whole country round, is strewed with ruins. We kept in the eastern arm, and in 15 m. came to a solid mass of brick in its bed, 31 paces long and 7 broad, rising in a slope from S. to N.; the bricks are kiln-burnt, 2 spans square and 4 inches thick, cemented with lime. The top of all is covered with a thick layer of small stones imbedded in cement, with bricks, in many places, set on their edges: some parts of this building are still 4 feet above ground; others are not more than 1. The eastern bank of the canal is much broken, and here the Nahr Batt enters it. I now left this arm and crossed to the other, over mounds and hillocks covered with broken pottery, glass and very large bricks; one larger mass near the platform is insulated by a cut from one arm to the other, forming a Delta. The principal ruins are between the two arms and between them and the river, and this I have no doubt was the very centre of the ancient Opis. The Arabs appear to have no particular name for the ruins, the place being called by them Kanáṭir (bridges). A modern caravanserai near the river, is called Khán Tholeia;* I galloped to it, and found it deserted: from its roof the Malwíyah at Sámarrah † bore N.W. ¾ W.; Khán Mizrákchí, W.N.W. ¾W.; Minaret at Harbah, W.S.W. ½ S.; Beled, W.S.W. ¾ S.; the tomb of Seyyid Mohammed, across the river, S.S.W.; a Khán near it, S. by W.: close under the two latter places, is the ferry by which pilgrims, &c. coming from the Káẓimeïn ‡ to Sámarrah cross the Tigris.

We now proceeded in the bed of the western arm of the canal of Nahrawán from the point at which a bridge had been dug up in order to furnish materials for building the caravanserai; the banks of the canal appear in many places to have been built upon, as, like the mounds, they are covered with broken bricks, pottery and pieces of glass. In the course of half an hour, I observed a branch slanting off from the eastern bank, and here the larger mounds ceased, and in 1 h. and 5 m. more, canal and all had been swept away by a háwí. We then descended and crossed the háwí, keeping nearly W. through a low tamarisk thicket, which it took us exactly 1 h. and 20 m. to cross. On getting out of it, we found a camp of the 'Azzá Arabs, and as the day was growing very hot, we halted at the tent of Khalaf-el-Ghazabá. This fine old man was once Sheïkh of the Tribe, but Dáúd Páshá suspecting him to be in league with Sufúk, the Sheïkh of the Shammár Tribe, deposed him in favour of his uncle; a great many families, however, still attach themselves to him.

At 4 h. 10 m. P.M. we again started, keeping for a short dis-

* Qu. Dhalí'ah, "strong-ribbed."—Ed.
† Or, Sarr-men-rá, often spelt Sámarrà.—Ed.
‡ "The two Repressers of their wrath," *i.e.* Huseïn and 'Alí, whose shrines (Mesh-hed) Kerbelá and Kúfah are so devoutly visited by Persian Pilgrims.—Ed.

tance N.N.W., then W.N.W., with the canal close to us. At 4 h. 50 m. a large branch passed off to our right. At 5 h. 25 m. we reached Khán Mizrákchí, close to which the canal has been carried away by the river: this khán is also deserted; from it, I found Malwíyah to be N.W. ¾ N.; Harbah, S.S.E. ¼ S. I now gave up the idea of going to Sámarrah this evening, and went on in the bed of the canal for 10 m., then halted in an Arab encampment close to its junction with another branch of the Nahrawán; the former leaves the Tigris only a few miles from hence, a little below Kádisíyah.

June 18th.—At 4 h. 5 m. A.M. we mounted and went N.N.W. over pebbly ground. In 10 m. we turned N.W. ½ W. direct for Sámarrah, passing several branches of the Nahrawán. At 5 h. 17 m. passed a well on the road side. At 7 h. 23 m. reached Sámarrah, and halted at the house of the Governor, Seyyid 'Alí, an old friend.

In the evening, when all the old men met to drink their coffee, settle disputes, &c. &c., I stated my wish to go on to Al Hadhr, but one and all declared the thing to be absolutely impossible without men from Sufúk: he with his Tribe was now in the neighbourhood of it and Sinjár, and no one would venture to attempt going near him.

The accounts I heard before, and now heard, of those ruins, were wonderful; complete buildings, statues, busts, &c. &c., were said to cover the country, which is under the dominion of devils and spirits, and inaccessible to all save the wild Bedwíns.

The modern Sámarrah consists of about 150 houses, built in the midst of the ruins of the ancient town, round the tombs of two of the Imáms, and the hole in the ground where the twelfth and last disappeared; these are held very sacred by all Mohammedans, but especially by the Shí'ah Sect, and the principal revenue of the place is derived from Persian pilgrims resorting to these shrines. The natives, however, are all Sunnís, and remarkable for civility and freedom from bigotry. The soil is a cement of pebbles in a bed of lime (in many places all lime), as hard as a solid rock, affording but little vegetation, and the climate is celebrated for its salubrity.

Of the ancient ruins, it is difficult to form any correct opinion from their appearance, as to whether they ever formed one town or several; they consist of an almost continuous belt about a mile in breadth, extending along the high bank of the valley of the Tigris from the second arm of the Nahrawán at Káïm in the S., to its grand arm in the N., a journey of about 7 hours, or close upon 30 miles. The ruins, however, have different names at different places, as Sámarrah, Chenáb,* Eskí Baghdád (Old

* 'Shinap', according to Mr. Ross; but the Arabs have neither *p* nor *ch*. This is a Persian word; the final *b* is pronounced by the Turks as *p*, and the *ch* changed by the Arabs into *sh*.—Ed.

Baghdád), Abú Dilif, &c. Many brick walls of what were evidently public buildings are still standing; the rest of the ruins show only confused heaps of rubbish, where in a few places there can still be traced squares, long walls, cross streets, &c. &c., and all seem to consist almost entirely of lime. Several tunnels for watering the town are even now perfect, though dry: the main trunk comes from the Hamrín mountains.

Káïm* is 1½ hour S. by E. ½ E. of Sámarrah, and stands on the southern bank of the Nahrawán, about 200 yards from the river. It is a solid square, built of pebbles laid in lime, and consists of twenty-four horizontal layers, each 2 spans and a quarter high, fronting N.N.W., S.S.E., E.N.E., and W.S.W., and measuring 5 paces and a half in diameter at the bottom. It is evidently a work of remote antiquity; the natives say it was the directing-mark for boats entering this branch of the canal from the river, long before the Mohammedan era. The difficulty is to imagine how the water itself ever entered the canal, its ancient bed being seen in section, about 15 feet above the surface of the Tigris, which, now nearly at its highest level, sweeps along the high perpendicular bank.

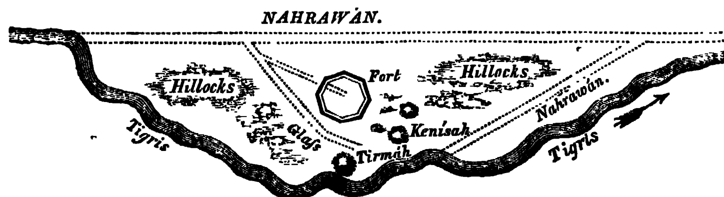
45 m. S.E. of Káïm stands the ancient Sasanian fort of Kádisiyáh (erroneously supposed by many to be the place of that name where the great battle was fought between the Arabs and Persians in the first years of Islám), an octagonal building of sun-dried bricks, each 4 inches thick and upwards of 1 foot in diameter. A large bastion stands at each angle, and seventeen smaller ones, 10 or 12 paces apart, are seen in each face, where there is also a cut, probably for the gates. There are scarcely sufficient marks within it, to show that buildings ever existed there. The Arabs say it was the fort of Daknáús (Decianus, who is here what Nimrod is with the people about Babylon, 'Akar-kúf, &c.), and was the work of a very great Ustád, or master-workman of those days: it is about 300 yards from the river, and is surrounded by hillocks of ruins covered with bricks, and showing in many places foundations of walls; the ground is covered with every kind and colour of glass, from the coarsest refuse of the furnace to the finest crystals. Close to the Tigris, there is a mound and part of a wall, called Terma† and Makán el Sanam; from whence some years ago the lower part of an immense statue of black stone, now at Baghdád, in the possession of Col. Taylor, was carried away, and I have no doubt that the other part of it is still buried hereabouts. A short way to the S. there are two other large mounds, one called Kenísah, or the Church, the other Hamám, or the Bath; not far beyond which, the shortest

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* Ghäïm by error in the Map.—Ed.

† Tirmáh? "Exalted," "Idol's" place.—Ed.

branch of the Nahrawán leaves the river. This town, when flourishing, must have been of vast strength, being built round the fort on a triangle, formed by two branches of the Nahrawán, connected by the Tigris thus:



Of the Mohammedan ruins, the most curious stand near the modern Sámarrah, and are called Malwíyah and Jámi' (cathedral), exactly 15 minutes' walk N.E. ½ N., and Kasr-el-Khalífah, or the khalif's palace, about 30 minutes N. of the Imám's tombs. The Malwíyah is a round solid cone, on a low square base; the whole appearing to be upwards of 120 feet high, built of fine kiln-burnt bricks, ascended from without by a winding path (not steps) of five turns, keeping the left hand to the wall. On the top there is a small turret, having a few steps of a staircase inside of it. This is said to have been the place from the top of which the faithful were, in the days of the Khalifs, called to prayers on Friday, in the jámi' or mosque close to it—a magnificent brick building in the form of an oblong square—264 by 159 long paces, with a bastion at each corner, between which there are, on the longer sides, eleven turrets, and on the shorter eight. The inner cloisters and an outside range of buildings have been entirely destroyed, and the bricks carried away. The remaining building, with the exception of the arches over the doorways, which have fallen in, is in a wonderful state of preservation.

The Kasr-el-Khalífah, or Khalif's palace, is a long T-shaped mass of ruins on the edge of a high bank, divided by three cross walls: its extreme length landwards is about 900 paces, the breadth of face towards the river 130 paces, and of the landward face 580; and it consists of ranges of gateways, arched rooms, vaults under ground, &c., with empty areas divided by cross walls. One vault excavated to a great depth, called Jibb,* is pointed out as the prison: its entrance is by a narrow shaft, and people must have been lowered into it and hauled up by means of a rope. Another deep square hollow close to it is called Birket-el-Sebá', or the Lions'-den.† A narrow subterranean passage is cut from the

* The well.—Ed.

† Rather the Lion's-pool.—Ed.

Jibb to the Birket, from the door of which, criminals are said to have been thrown to the wild beasts. From the face towards the river, an inclined platform, resting on arches, leads down to the háwí; and outside of the palace, at its N.W. corner, stand fine ruins of a turreted building called Hamám, or the bath.

A ride of 1 hour and a half from the palace northwards brought us to one large and two smaller lime-built enclosures called Chenáb, the intervening space being covered with ruins. Going over the same kind of ground for about 3 hours, we came to the mosque and minaret of Abú Dilif-el-Barmakí, a malwíyah and jámi' in miniature. From thence, ½ an hour to Kantarat-él-rasásí, or the leaden bridge, over the larger branch of the Nahrawán. Its foundations formed of large artificial stones joined together by iron clamps and melted lead, are still visible; from the Kantarah (bridge) a road of lime and pebbles, about 80 yards in breadth, having a parapet on either side, leads in a straight line to Chenáb: this work appears to be anterior to the Mohammedan era.

The only other ruins worth noticing on the left bank of the river, are Jauríyah,* or Infidels' Place, and Till Walíjah. The former, which is in the Háwí, and partly in the river, W. by N. from the river-face of the palace, is an irregular, square enclosure; the part next the river being a very strong buttress of brick and lime, and in some places of pebbles and lime: it appears to be of greater antiquity than the Mohammedan era.

Till Walíjah is a very singular piece of antiquity, situated N.N.E. of the Malwíyah, and E.N.E. ½ N. of the palace outside the ruins. It is a solid truncated cone of earth about 100 feet high; the plane at the top is 30 paces in diameter; and the bottom, I should say, about five times that size. Its base is in a hollow, which extends for forty paces beyond it, and seems to have been intended for a ditch, as, on its N.N.E. side, a causeway or bridge crosses it. 110 paces from the ditch, there is a circular rampart. The ascent from the bridge, as indeed from all places, is so steep that a horse can barely be led up: it has been watered by a cut from the tunnel before mentioned. I cannot make out what it could have been intended for: the tradition of the natives is, that when the khalif fixed upon this site for building Sámarrah, he ordered every horseman in his army to fill the nose-bag of his horse with earth and bring it to this spot, that he might have a high place on which he could pitch his tent, in order to view the progress of the building of the city; and that a single trip by each man produced the Till Walíjah,† or mound of the nose-bag.

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* A barbarous word, formed from the Persian Gabr, or Gaur, changed into Jaur by the Arabs.—Ed.

† Valíchah (nose-bag) is a Persian word, vulgarly pronounced Alíj.—Ed.

El-Madrasah * is an excavated hollow, lined with brick building, with numerous niches in the wall; it is said to have been a college and library.

June 22*nd*.—Finding it impossible to approach Al-Ḥadhr in this direction, I gave up the attempt for the present, and resolved to visit an extraordinary band, or dyke, said to be built across the fissure in the Ḥamrín hills, through which the "Adhem river passes; and each stone of which, the Arabs say, could not be lifted by a hundred men. I accordingly determined to avail myself of my late acquaintance with Khalaf, and at 4 h. 30 m. A.M. started for his encampment by the former route. At 6 h. 30 m. I passed the well—at 8 h. 15 m. the khán—and at 9 h. 10 m. reached the camp, and halted.

I received the most marked attention from Khalaf, who at once entered into my plans, and agreed to furnish guides. During the usual evening's palaver, I inquired whether they had ever heard of the Median Wall, or of anything like it—when, to my astonishment, they answered that every Bedwín child knew it—that it leaves the Dijlah between Iṣtabilát and Ḥarbah, runs in a straight well-defined single embankment, with round projections from it, across Jezírah to Felújah on the Euphrates, and is called Khálí or Sedd Nimrúd;† and that "it is still so high that two horsemen, one on each side, cannot see each other."

June 23*rd*.—Before daylight Khalaf brought four spearmen well mounted, and told them they must go wherever I went, and be absent as long as I chose to keep them. Upon my saying the country was all quiet, and guards unnecessary, one guide being quite enough,—he told me that, in this instance, I must be guided

* The College.—Ed. † Nimrod's Barrier.—Ed.

by him, as no one could say how long the country was to remain secure, or whether it were so even now.

At 4 h. 35 m. A.M. we started N.E. by E. over the Nahrawán; soon afterwards passed a small stream from the hills, which is said to be full of water in winter. At 5 h. 25 m. kept E. by N., and at 5 h. 40 m. crossed the other branch of the Nahrawán. Its banks are here very much worn away, but still bricks and broken pottery are seen: this country is flooded in winter. At 6 h. halted for ten minutes, to give the horses barley from a field in the dry bed of a winter-lake, cultivated in summer by the Arabs; we then went on E. by N. At 7 h. we found the ground covered with bricks and pottery. I took one of the Arabs, and rode off to the left to a set of mounds called Jiff Ja'fer, covered with very large bricks and fragments, as is the whole surface of the desert for 20 minutes round them. A small branch from the Batt-canal runs through them; Malwíyah bore W.N.W. ¼ N.; a large mound called Abú Khalíd, N.E.; two domes of the tomb of Imám Sheikh Mohammed N. by W. Not far distant from those domes there is said to be a large salt-lake, from which the whole country is supplied with salt. At 7 h. 45 m. we came to a very extensive cluster of mounds called 'Adhúbah,* covered with large bricks and the other usual remains, situated on the Nahr (River) Batt, which comes from N.E. ¼ N. At this point a branch is drawn off to Jiff Ja'fer, which bears W., Abú Khalíd bearing N.N.W., beyond which a great number of sandhills, called El-'Áith† and Wiláyat Bení Isráil,‡ are seen. The Arabs told me that these change their position with every shift of wind; and that by digging only for a few inches in depth, fresh water is found. We now went nearly E., and at 8 h. 25 m. came to a háwí of the ''Adhem, went down into it, and kept N.E. for about 20 minutes, then went up, crossed a narrow neck of land, and descended again into another háwí, and halted at 9 h. in an encampment of the 'Azzá tribe. The ''Adhem winds very much in its broad valley, but its general course is from N.N.E. The háwís are full of encampments of the 'Azzá, and in many places well cultivated.

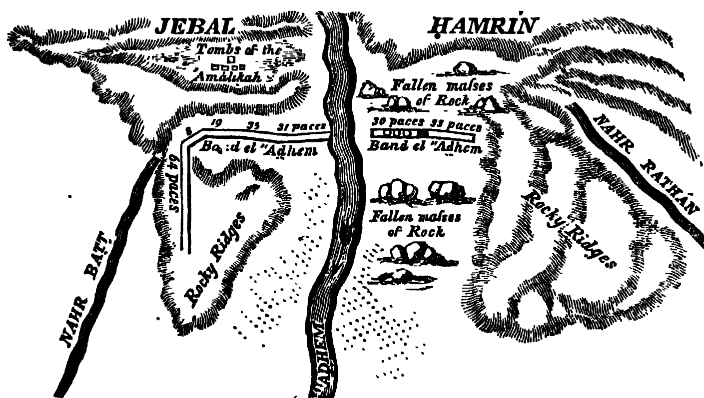
At 4 h. 35 m. P.M. we again mounted, and went up the high bank to look at a mound on its edge, called Ghadherífah,§ like all others, covered with bricks and pottery, but said to be very much infested with devils, who play many wonderful tricks on such benighted travellers as chance to come near it. We then kept a course from N. by E. to N.N.E.; and at 5 h. 30 m. reached a small mound called Till Khirr-el-Hintah.|| The ''Adhem was now consider-

* Fresh water.—Ed. † Mischief.—Ed. ‡ Country of the children of Israel.—Ed.
§ Ghidhríf', in Plur., Ghadhárif, "cartilages."—Ed.
|| "Wheat-hole Mount," *i.e.* the hole through which wheat is thrown into the mill.—Ed.

ably to our right, and appeared to take a sweep eastwards. At 6 h. 10 m. we came upon two large and several small mounds, called Shudháif,* on the Nahr Batt, Ghadherífah bearing S.W. by S., Till Khirr-el-Hintah S. W. ½ W., El-'Aïth W. Our course was winding between N. and N.N.E. At 6 h. 35 m. had a low hill called Till Nahríyah† a quarter of a mile on the left. At 7 h. 5 m. passed a large mound called Istaháwí, having a branch from the Batt passing into it. At 9 h. 30 m. we came upon the bank of the 'Adhem, and kept along it till 10 h. 15 m. and then went down into the háwí, and halted close to the stream, at a place called Kullah Samúr.‡

June 24*th.*—At 1 h. A.M. we mounted, and kept along the high bank to avoid the háwís. At 2 h. 20 m. we got among some hillocks on the Batt, where, by the little light we had, bricks could be distinguished. At 3 h. 30 m. we passed a high conical mound on the 'Adhem, called Till Band,§ and at 4 h. got to the Band itself, just after daybreak.

It is a most gigantic work, but now broken in the centre. The following is a plan of it:—



The Band, which is built of enormously large blocks of hewn sandstone cemented with lime, is in the form of two sides of a square, one crossing the stream just where it leaves the Hamrín hills, and the other running along the right bank. Though of vast strength and thickness, it has not been sufficient to resist the force of the water, and has given way in the centre right down to its foundations, having been swept off through the whole breadth of the stream. In modern times Suleïmán Páshá attempted to restore it, but failed; nothing of his work remaining, except three

* Dry, hard trees.—Ed.
† River-hill.—Ed.
‡ Samúr's tower.—Ed.
§ Dyke-hill.—Ed.

brick buttresses against the old work on the eastern side. The hills are low and rugged, formed of a brown sandstone. The stream at the Band runs S.S.E., but soon afterwards turns S.S.W. It is not above 30 feet broad here, and at present only from 12 to 20 inches deep; but in winter the Arabs tell me the rush of water is terrific, tearing away all before it. The ′Adhem carries into the Tigris the united streams of the Ḳissah Ṣú, Ṭáúḳ Ṣú, and Ṭúz Khurmá-lí Ṣú,* which unite beyond the hills, and are increased during their passage through them by many small hill-brooks. The bed of the ′Adhem being much lower than the surrounding desert, the Band was erected to throw the water for irrigation into the Nahr Batt on the right bank, and into the Nahr Rathán on the left, the former going towards Ḳarfah, the latter to Nahrawán. I was told there was a scale in unknown letters cut on the rock to mark the rise of the water, but I could not discover it. The Arabs say this dyke was constructed by the 'Amálikah,† immense giants, soon after the Flood; and they show several large cairns of stones, said to mark the graves of some of them who died during the time it was building: they also told me that in the hills, at an hour's distance W., there are many serdábs or caverns in the rock, containing the hewn stones and burnt lime which remained after the completion of the Band. But as our horses had been 12 hours without food, and had 12 more to get back, I did not go to see them; but at 5 h. 50 m. A.M. we set off on our return.

At 6 h. 10 m. we reached Till Band, which I ascended. On its summit there is a platform of the same kind of stones as form the Band. Our course was now generally S. by W.; sometimes on the bank of the river, at others in the Batt, which has here two beds running close together. At 7 h. the Batt is carried away by a háwí. At 8 h. 30 m. we arrived at the place where we slept the night before, and halted till 9 h. 40 m.; and just as we were preparing to start, my horse, another belonging to an Arab, and a mare, got loose, and galloped away over the desert as hard as they could. Another Arab mounted, and the owners of the horse and mare on foot, went after them, leaving us to follow under the guidance of the fourth Arab, an old man. Our misfortunes were not yet at an end; for one of the mules then ran off with his load, but kept in the bed of the river, and consequently in the right direction, and in a few minutes more four horsemen appeared on the opposite high bank: our gallant old Arab instantly knew them to be plunderers; and calling out that he must go and

* Ṭúz Khurmátí in Dr. Ross's MS.: so Niebuhr (Reise, vol. ii. p. 336) has Dûschurmatu; but the Jehán-numá (p. 466) has Ṭúz-khurmá, a Turkish name, the adjective of which, Ṭúz-khurmá-lí, has been changed into Ṭúz-khúrmatí by ignorant Arabs, who supposed the name to end in *ah*, instead of *á*.—Ed.

† Amalekites.

bring back our people, galloped off as hard as his horse could carry him.

At 11h. 15m. we secured the mule, the thieves still dogging us, but, owing to the steep banks, they could not get at us: there were now six of them. We soon overtook one of our footmen, and had then five men, one gun, two pistols, a spear and a sword; so we bid the thieves defiance. At 12h. 30m. P.M. we saw the pillar near the Khán at Baṭṭ, for the direction of travellers to the caravanserai, which lies in a hollow on the left bank of the river: we made for it, and at 1h. 15m. arrived opposite to the khán. The thieves, now nine in number, showed themselves, and entered the khán; but, seeing us go on, came out again and crossed the stream, determined to attack us. We took up a position among a few bushes—old Seyyid Hindí fingered his lock, the Arab shook his spear, the sword was unsheathed, pieces of bricks were hastily collected, and all made ready for a terrible encounter. My pistols were with my horse; and I therefore most sincerely advise all travellers to carry their pistols in their belts. The enemy made a charge to within five hundred yards of us, when they pulled up, and I could see they had only spears. Our man with the pistol let fly; and we stood looking at each other for five minutes, when we saw the thieves turn and fairly run away; at the same instant we perceived our own men with the horses looming in the mirage, and coming at full gallop from the west. At 1h. 55m. they joined us, having secured the horses after a long chase; mine without one of my pistols, and theirs with the loss of a saddle and bridle. This business lost us upwards of half an hour: the old gentleman became very bold, requesting us just to wait for another half-hour, till he and his party could overtake the robbers and bring back their heads: having, however, tasted nothing but water since yesterday at noon, we all came to the conclusion that our time would be better spent in prosecuting our journey, which we accordingly did.

At 2h. 25m. A.M. we travelled S.W. by W., and passed a mound called Till Aujá; itself and the desert about it were covered with bricks. At 2h. 45m. we went down into the bed of the river, which takes a turn from hence eastwards. At 3h. we halted for ten minutes, and then went on. At 3h. 40m. we mounted the high banks, and at 4h. 33m. passed Till Khirr-el-Ḥinṭah; and having, at 6h., descended into the háwí, halted in a few minutes at a large camp of the 'Azzá, a short way S. of that in which we had halted the day before. My Arab went to different tents, while I went to the largest I could see, and was received very gruffly. I, however, dismounted and sat down, though I saw there was something wrong. In a few minutes the owner came up and took me most cordially by the hand, saying he was

mistaken—that he had taken me for a Turk; but now, knowing who I was, the case was widely different. The Sheïkh was away, so I gave the Páshá's letter to this man, who looked at it and tossed it back to me, saying, "You are welcome to our camp, and all in it is yours as long as you choose to stay, for a day, a week, or a year; put 'Alí Páshá's letter into your pocket, and eat your dinner; we do not much value Fermáns here." They gave me a capital dinner, and we sat late. They are very much afraid of Sufúk, who is now near Músul.

June 25th.—After a refreshing sleep, we mounted at 4h. 20m. A.M., going first W., to get round a part of the adjoining land enclosed in the háwí like an island, and in half an hour turned S.S.W., in the bed of the river. At 5h. 50m. we went up and along the high bank, passing a mound called Till Nisr.* We were obliged to go round the broken ground at 6h. 25m., and keeping S.S.W., passed, at 7h., a cluster of mounds, called Kubebát-el-Khayát;† the Nahr Batt being visible on our right. We now kept S., over a country covered with bricks, but much cut up by rain. At 7h. 45m. we got to the Nahrawán, just where it is destroyed partly by the 'Adhem and partly by the Tigris; and having halted for twenty minutes, at 8h. 5m. went on in the bed of the canal by our former route. At 8h. 52m. we passed Till Muhassil; at 10h. entered the háwí, and in it, at 11h. 25m., came upon the 'Azzá pitching their tents among the tamarisk-bushes. Not being able to see Khalaf's tent, I went to a good-sized one and halted there; I had scarcely set down when Khalaf was seen coming to us and calling us to the tent where he then was, while his own was getting ready. I got up, but the owner of the tent took hold of my cloak and pulled me down, saying, "No, no; you are my guest, and shall go to no other man's tent, not even to the Sheïkh's." The Sheïkh was then brought in, and we all sat down. We were informed that the Arabs who followed and assailed us on the preceding day were a gang of the Āl Bú Ayyázah,‡ most notorious rascals. Before we saw them, they had attacked a caravan at Till Willí, but were beaten off; they had been on the Karfah road for some weeks, but are afraid of the Azzá.

At 3h. 50m. P.M. we again mounted, and started for Sámarrah, which we reached at 9h. 20m.

I now resolved to go to Baghdád by water, sending the horses over land, and accordingly had forty sheep-skins blown up, tied together, and covered with brushwood, on which four of us got at sunrise, June 28th, and reached Baghdád about noon, June 30th.

* Eagle-hill.—ED. † Spectre-cupolas.—ED. ‡ Father Ayyázah's Family.—ED.

I kept notes of the bearings and distances all the way down; but as the river has since been trigonometrically surveyed by the officers of the "Euphrates" steamer, I do not think it necessary to add them here.

The following bearings were omitted above:—

	From Till Walíchah.		From Gaur.
Malwíyah	S.S.W., Southerly		S.E. ½ E.
Greater Tomb	S.S.W. ½ W.		S.E. ½ S.
Ḳáïm	Southerly.		
Gate of Khalífah	W.S.W. ½ S.		E. by S., Southerly
'Ashiḳ	W. ¼ N.		N.N.W. ½ N.
Chináb	N.W. ¾ N.	Till Walíchah	E. ¾ N.
Abú Dilif	N.N.W. ½ W.	Selebíyah	W. ½ S.
Ḳanṭarah Reṣáṣí	N.N.W., Northerly	Kal'at-el-Kelb	S.S.W. ½ W.
		Ḥawáṣilát	N.N.W. ¼ W.

Baghdád, Dec. 15, 1839. John Ross.

X.—*Routes in Kirmán, Jebál, and Khorásán, in the Years* 1831 *and* 1832. By Richard Gibbons, a Sergeant of the British Detachment serving in Persia.

In the beginning of the autumn of 1830, while the province of A'zerbaïján was still suffering, in common with a great part of Persia, from that most dreadful scourge, the plague—by which many villages, and even some of the larger towns and cities, had been nearly depopulated, the king's eldest son, 'Abbás Mírzá, received orders from his father, Fat-ḥ 'Alí Sháh, to assemble his army without delay, and march towards Yezd and Kirmán, in order, if possible, to restore order and security to those devoted provinces, which were then suffering under the accumulated horrors of civil war, pestilence and famine; and to reduce the prince, Ḥasan 'Alí Mírzá, governor of Kirmán, who was in a state of open rebellion, to obedience.

I shall not stop to give an account of the many difficulties which were encountered and overcome, ere the troops could be assembled at such a disastrous period—suffice it to say, that the non-commissioned officers of the British Detachment marched down, with the different corps to which they were attached, to Khemseh, where the force was concentrated and placed under the temporary command of Moḥammed Mírzá. Here our commandant joined us, and we left the camp and proceeded to Ṭeherán, to await the orders of the British Ambassador as to whether we were to accompany the army to Káshán or not. We advanced by the usual route, viz., the high road to Iṣfahán; but as that route is well known, and in order to avoid a detail of occurrences on the

march, a mere statement of the route, general direction, towns, villages, watering-places, &c. &c., will, for the most part, be given, and I shall begin the present extract from my journal with our departure from the thriving city of Káshán, celebrated throughout Persia for the industry of its inhabitants.

From Káshán to Abú Sayyad-ābád,* 24 miles E.S.E.

At daylight, on the morning of the 16th of March, 1831, we quitted Káshán; at 12 miles, passed a reservoir of water; at 16 miles, a village on the right, about a mile from the road; and at 20 miles, another on the left. Abú Sayyad-ābád is a large village. The road lies over a sandy plain; the view to the left being bounded by hills, and to the right by the Korúd range of mountains at a distance.

17th March.—To Mokhar, 40 miles S.E. by E.

At 2 miles, a ruined mosque, or Imám-zádah † and cultivated ground, on the left; 2 miles further, a small village on the right. At 16 miles, we passed through a fine village called Keft-ābád, surrounded by gardens and corn-fields. There is another village 2 miles further on, and, in the course of another mile, a third. The road still lay along the plain. The village of Mokhar was, at this time, nearly untenanted; its inhabitants having repaired to the mountains. It is large, and surrounded by a lofty wall: most of the houses are two stories high: there are many gardens and a great extent of cultivated land adjoining it. A small stream winds by its walls.

18th.—To Ajistán, 20 miles S.S.E.

Continued over the plain, passing, at 2 miles, a village on the right; and at 12 two others, about two miles distant from each other and from the road. Ajistán is a large straggling town, surrounded by gardens, and celebrated for its pomegranates. The Sháh has a palace here, but it is in a dilapidated state.

19th.—To Safergán, 18 miles E.S.E.

After crossing a gravelly slope for about 4 miles, we entered a narrow gorge in the hills, through which a rivulet winds. Safergán is a large village surrounded by high hills: it is not walled. The population is considerable; and it has a thriving appearance.

20th.—To Neyásánah, 26 miles S.E.

For 12 miles we continued to wind through the gorge in the mountains; after which the road opens upon a vast plain, dreary and barren. The miserable village of Neyásánah was totally

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* Perhaps Abu Su'úd-ābád. The names in the original are not spelt on any uniform principle, and often solely from the ear: where the equivalent here given is doubtful, the original spelling has been added below.—Ed.

† Literally "Imám-born:" it is the title of the descendants of the Twelve Imáms, and is applied in Persian to their tombs, which are places of pilgrimage.—Ed.

deserted by its inhabitants, who had fled at the approach of the troops, and had not yet returned. There is a caravanserai near it.

21st.—To Náyan, 20 miles S.E.

We continued along a desolate plain destitute of water to Náyan, which is a considérable town. There are many ruins in its environs, and the water is brackish.

22nd.—To A'g Déh, 40 miles S.S.E.

We again entered the desert; a small village, with a spring of fresh water, at 12 miles. At 20, we passed a fine caravanserai and a salt stream, but no fresh water, nor did we meet with any till within a couple of miles of A'g Déh, which is a town of some size, surrounded by a high wall in good repair. The country around is well cultivated, but the soil is in many places strongly impregnated with salt. There are many date-trees in the neighbourhood of this place, and a stream of salt water.

23rd.—To Ardekán, 28 miles S.E.

Still along the desert. At 4 miles, we passed a wretched village nearly smothered in loose sand; at 12 miles a second, in a similar condition; and at 16 miles, a stream of fresh water. At 20 miles, we crossed a low and narrow range of hills, and entered a part of the plain which bore a more cheerful aspect, being interspersed with villages and cultivated ground. Ardekán may be termed a city; it is protected by a strong wall, and successfully resisted the efforts of Hasan 'Alí Mírzá to take it. It contains a good bázár. Hinná* is much cultivated in the neighbourhood.

This place is situated near the borders of the Great Desert, which our road had skirted for some days. The country for the most part is covered with loose sand, into which cattle sink knee-deep at every step, and as it is driven about by the wind in vast clouds, it renders travelling exceedingly disagreeable; and banks of it are thus formed against the walls of all the gardens and villages. If it were not for the constant use of manure the whole plain would quickly become a barren waste. That the desert is slowly but constantly encroaching, is evident from the distant view we had of many half-smothered and long-deserted villages now far within its precincts, though they must at one time have been surrounded by arable land.

24th.—To the caravanserai of Askanadi, 26 miles S.E.

We still skirted the desert, through deep sand. At 6 miles, a large village; at 12 miles, a second; at 16 miles, a third; and at 21 miles, a fourth, that of Yezd-ābád, which is within a mile of the caravanserai. The cultivated parts of this country are

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* Lawsonia inermis of botanists, the leaves of which are used in the East for dyeing the hands and hair red.—ED.

irrigated by means of subterranean canals, by which the water is conveyed from the mountains; but, from the looseness of the soil, they require continual labour to keep them in repair.

25*th.*—To Yezd, 20 miles S.E.

At 6 miles the road runs through the fine village of Eskazad, embosomed in gardens. Half a mile further on, we had a view of another village, called Gach: many ruins were scattered around.

The city of Yezd is situated near the foot of the range of mountains which bound the plain to the westward, and it is about 5 miles in circumference. The town, though walled, was easily taken by Hasan 'Alí Mírzá; but he was unable to gain possession of the ark (citadel), in which 'Abdu-l Rizá Khán held out till he was relieved by 'Abbás Mírzá. The latter is surrounded by a strong wall and deep trench, and contains a palace built by Mohammed Walí Mírzá, together with several other public buildings, and the residences of a number of the chief men of the district.

The bázárs in the outer town are spacious, but were at this time almost entirely abandoned, having been plundered by Hasan 'Alí Mírzá's troops. Gebrs, who here, as well as in Bombay, cling tenaciously to their ancient faith and worship, or rather venerate fire as the emblem of the Deity, are very numerous; there are also a good many Jews. Its manufactures, consisting of a variety of silks, velvets, cottons, namads (coarse woollens), loaf-sugar, &c. &c., are sufficiently known.

The country having been for some time the scene of civil war, famine, as a natural consequence, had ensued; and provisions of all kinds were so exceedingly dear that the poorer classes were unable to purchase them, and numbers died of absolute starvation.

'Abbás Mírzá, having removed the governor, 'Abdu-l Rizá Khán, had left the city in charge of Suleïmán Khán, the commander of the Shegagí* regiment. The whole of the villages during the last three days' journey had been plundered; and the inhabitants, although their crops promised well, were then in a most wretched condition. However, the corn of this district is at no time sufficient for the consumption of its inhabitants, supplies being brought from other parts in exchange for fruits and manufactured goods.

28*th.*—Merhis, 28 miles E.S.E.

We departed from Yezd this morning, and skirted a range of hills; passing during the first 8 miles two streams of water, and at 10 miles a village. Merhis is a fine village, situated at the foot of the mountains, and surrounded by gardens.

29*th.*—To the caravanserai of Zeni-ten, 26 miles S.E.

At 6 miles we crossed a low range of hills, and at 12 miles

* Shekákí?—Ed.

had a distant view of three villages, adjacent to each other, on the left. The caravanserai of Zeni-ten is ruinous, and stands alone in the desert: the only water to be had is from a small spring, dark-coloured, brackish, and bitter, with a strong bituminous smell, and a most disagreeable taste.

30*th.*—To the caravanserai of Shams, 38 miles S.E.

Our route still lay along the desert. At 12 miles we had a view of a village, apparently deserted and in ruins: at 20 miles we reached a caravanserai, where there was a stream of indifferent water, issuing out of a low hill, only in sufficient quantity to keep a small pond full: 4 miles further on, the road turns to the right, over a range of low hills, which here intersect the plain. The caravanserai of Shams is situated similarly to that of Zeni-ten, and supplied with water from a spring of precisely the same description, brackish and ill flavoured.

This place is notorious for robberies and murders; and we found half buried the bodies of four men who had evidently been very recently slaughtered. Their wounds had been inflicted either by the broad double-edged khámah (dagger), or by the sword.

31*st.*—To Annor, 24 miles S.E.

The road was along the desert, without any water, till we came within a couple of miles of Annor, which is a fine village, surrounded by many corn-fields, and some gardens, and watered by a small stream. There is an Imám-zádah adjacent, in the midst of a grove of very ancient fir-trees.

April 1*st.*—To Sheríf-ābád, 32 miles S.E.

For 20 miles along the desert, we then passed through the village of Bayos, surrounded by gardens and corn-fields; beyond which we again gained the barren plain, and continued along it to the small village of Sheríf-ābád.

2*nd.*—To Khallah Aghá, 30 miles E.S.E.

Our course again lay along the dreary and barren plain for 24 miles, when we fell in with two small villages. Khallah Aghá is a populous little town, and has a good caravanserai.

3*rd.*—To Kabud-harkhán, 30 miles S.E.

Along the plain, at 8 miles, a large village lay about 2 miles off the road. Water is found at 24 miles; and there is a caravanserai at the small village of Kabud-harkhán.

4*th.*—To Bákin, 30 miles S.E.

The road is similar to that of yesterday. At 20 miles we passed the large village of Robát;* and at 24 miles, another small village. The last 4 miles of this day's journey were through corn-fields. Bákin is a large village; and if we may judge from the great extent of ruins which surround it, the place must have been once far more considerable.

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* Robad.—Serg. GIBBONS.

5th.—To Kirmán, 20 miles E.

A good caravanserai and streamlet at 12 miles. At 16 miles, we passed a small village with a few gardens and an Imám-zádah. Approaching Kirmán, the plain gradually narrows to a valley. The city, which is about 3 miles and a half in circuit, is walled. It is situated at the foot of a high range of mountains, whose summits were now covered with snow.

Ḥasan 'Alí Mírzá had been taken without a struggle, and was then a captive in the camp. He was a few days afterwards sent a prisoner to Ṭehrán. The inhabitants, knowing the city to be incapable of defence, had forced him to surrender to 'Abbás Mírzá.

The bázárs were, at this time at least, but poorly stocked, though extensive; and there were many ruinous buildings to be seen within the town.

The principal manufactures of this place are shawls and namads;* the former of various descriptions and patterns, made from the hair of a goat, considerably smaller than the common sort, and covered with a thick coat of long white hair, frequently sweeping the ground; the latter the best made in Persia. Lead is brought from the mountains towards Belúchistán.

About 1 mile to the S. are the ruins of a former town, girding a hill, which is crested by the remains of a fortress, once apparently of considerable strength, and completely commanding the present city.

The Prince 'Abbás Mírzá's camp, which we here joined, was pitched about ½ a mile from the town. The force here under his immediate command consisted of about 5000 cavalry, twenty-four guns, and the Khásseh, 2nd Tabríz, Marághah, Ḳará-ṭágh, Khói, Afshár, Hamadán and Khemseh regiments, averaging 800 men each corps. Rations were at this time distributed pretty regularly; but the soldiers were already beginning to murmur about their arrears of pay.

A son of Ḥasan 'Alí Mírzá having shut himself up in the fortress of Shehri-Bábek, it was judged expedient to send a division in that direction, as well to reduce him, as to quell any insurrectionary movements in that quarter. A force, composed of three regiments, five guns, a howitzer and a thousand horse, under the command of Mohammed Mírzá, and accompanied by the British detachment, was accordingly despatched for this purpose.

We marched on the 10th of April to Bákin, 20 miles W., which I have already described.

11th.—Twenty-eight miles N.N.W. to Mashís.

For 12 miles across the plain; we then entered a narrow

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* Coarse woollens; blankets.—Ed.

valley, and continuing up it for 2 miles, arrived at some ruins, and a small spring of brackish water, where the troops were halted for breakfast, which was in most cases a crust of bread and a draught of water. After this we ascended hills for about 4 miles, when we began to descend abruptly into an extensive plain, dotted with numerous villages, of which Mashís is the most considerable. A great part of this plain is cultivated. Here we halted two days.

14th.—To Mahának, 16 miles W.

The road lay over hills, through a wild country, abounding with deer, wild boars, hares, &c.: encamped on the banks of a stream, in a valley called Mahának.

15th.—To Súr-khán, 20 miles W.

Continued over a country similar to that crossed yesterday, overgrown with underwood in many places: encamped near a stream, adjacent to the ruined caravanserai of Súr-khán.

16th.—Twenty miles W., over hills: encamped in a narrow valley, through which a rivulet wound.

17th.—To Sa'ad-ābád,* 20 miles W.

Hills for 16 miles, when the road entered an extensive plain, running N.W. and S.E. Sa'ad-ābád is a large village: there are several others not far distant.

18th.—To Sayyad-ābád,† district of Shírján, 24 miles W.

Route across the plain. Sayyad-ābád is situated at the foot of a range of mountains; a number of other villages skirt the hills on this side, each being surrounded by gardens and corn-fields, &c.

Having this day received intelligence that the young prince had left Shehri-Bábek, and taken refuge with his uncle at Shíráz, the army was halted here for some time, and the men were drilled daily, though nearly in a state of mutiny, from not receiving their pay, nor even their rations, regularly. The Kará-ṭágh regiment at length broke out into open mutiny, and it was with difficulty they were quieted with the payment of a tómán‡ to each man. "Let us but return to our homes," said these poor fellows, "you may then keep our pay, and we shall march ten fersekhs § a-day till we rejoin our families."

May 24th.—To Esyedābád,‖ 20 miles E.S.E.

Taking leave of Shírján this morning, we continued along the plain, about which were scattered many villages, each surrounded by a belt of gardens and large tracts of cultivated land. But the promising prospect of an abundant harvest, with which the peasantry hoped in some measure to reimburse themselves, after having been first plundered by Hasan 'Alí Mírzá's army, and having the little provisions that remained wrung from them

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* Sahadabad.—GIB. † Suyudabad.—GIB. ‡ 12*s.* 6*d.* § 35 miles. ‖ Eseyedabad.

by our own, was blighted at once. The air was literally darkened by clouds of locusts, and myriads were busily employed in devastating every corn-field that we passed. So amazingly numerous were these insects, that in the course of a couple of hours, at the furthest, from their alighting in a field, nothing but leafless stalks remained to reward the labour of the husbandman.

25*th*.—To Tuzerg, 24 miles E.S.E.

At 10 miles we saw a village, and at 20 miles left the plain, and went up some low hills, among which is situated the village of Tuzerg.

26*th*.—To Húshán, 20 miles E. by S.

We marched over ranges of hills, gradually increasing in height, to the small village of Húshán, having passed a stream about half way.

27*th*.—To Báft,* 18 miles E.S.E.

Road like that of yesterday. At 8 miles we passed a stream, and at 11 miles a village. An elevated range of mountains appears to the eastward, some of their summits being still capped with snow. Báft is an inconsiderable village; but some provisions having been collected, the troops halted here for a day.

29*th*.—To Sereb-khán, 30 miles E. by S.

In ½ hour we crossed a stream, and 2 miles further on, passed a ruined village; and at 8 miles beyond it, a second; after which the road lay for about a mile on the banks of a river. The country was hilly, with much underwood, and several stunted trees interspersed, among which I observed the ash, white-thorn, wild almond, &c. We encamped on the banks of a river, in the gloomy and secluded valley of Sereb-khán.† The troops were so exhausted with this march, mostly over hills and mountains, that it was found necessary to halt here for a day. Murmurs again arose among the troops, who, after their long march, could not procure a morsel to eat, there being neither village, caravanserai. nor I'liyát tent to be seen; nor did we pass a single inhabited spot this day. As for the I'liyáts, from their superior knowledge of the country, they easily kept out of our way, striking their tents, and driving off their flocks and herds to the deepest recesses of the mountains, many days before we reached their usual haunts.

31*st*.—Ten miles W. by N., and afterwards E.S.E.

I presume the further road in the direction we were proceeding was found to be impracticable for guns; for to-day we turned back for 10 miles, then proceeded up a valley to the right, and ascending some steep hills, marched along a table-land upon their summits, till within ½ mile of the place of encampment, when we

* Bawft.—Gib.   † Serephan.—Gib.

descended into a deep glen, in which the tents were pitched, on the banks of a river. There were some ruins on a neighbouring eminence. The artillery, being unable to follow the route of the Sarbáz, pursued the course of the river.

June 1st.—To Ālá-rúd,* 16 miles S.E.

The road passed over steep and rugged hills for a couple of miles, when it traversed a table-land for 6 miles more. At this point there was another ascent, where we were obliged to dismount the guns, and have them dragged up by the soldiers, for 4 miles over another table-land, when we descended by a deep pass, down which it was necessary to lower the guns with ropes into a narrow valley, in which the camp was pitched on the banks of a stream. There was no village to be seen; but there were many corn-fields cultivated in this sequestered spot by the I'liyáts, who had fled on our approach. Here the troops remained two days, feeding their cattle with the produce of the surrounding corn-fields, now nearly ripe.

4th.—To Dás,† 30 miles E.

Over a mountainous country, almost impassable for the guns. The sides of the hills were dotted here and there with stunted trees, among which was the fir. We passed up several romantic valleys, till we arrived at the foot of a stupendous range, of which the summits were covered with snow, where the prince's tent was to be seen, none of the others having arrived. Many of the men did not come in till late at night; and all were in a state of open mutiny, from starvation and fatigue.

5th.—To Sardoh, 12 miles E.

Mostly a descent through a defile, along the course of a stream. Passed an Imám-zádah and grove, close to the camp, which was pitched in a small plain surrounded by high mountains. There were the ruins of a fort upon an eminence not far from the camp, some I'liyát tents in the vicinity, and a mill embosomed in a grove of most venerable trees, but no village. Here we made some stay, in the utmost want of provisions, feeding the cattle on the surrounding pastures and the produce of the corn-fields, which were cut down without mercy for that purpose. The troops again mutinied, and the Khásseh regiment had even begun to march towards Kirmán, but were with great difficulty persuaded to return. This place is within 5 days' journey of Bander 'Abbás;‡ and as far as I could learn, the road to that place, though very difficult in some parts, is not totally impracticable for guns.

14th.—To Rogín, 40 miles E.N.E.

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* Allarood.—GIB. Muddy stream.—ED. † Daws.—GIB.

‡ Or Gamrún, opposite to Hormuz.—ED.

The detachment being ordered back to Kirmán, and having no foot soldiers with us, it was determined to make as long marches as possible. Having crossed the plain, our road lay among high mountains for about 20 miles, passing, at half way, the tents of Kásim Khán, the serhang or colonel of the Khássehs, who had been ordered to Kirmán, to answer for the mutiny of his regiment, but had made 2 days' journey to this place, proceeding as slowly as possible, in order to give his friends time to intercede for him with the prince. The road then enters an extensive plain, in which is situated the village of Rogín, together with many others, all of which were suffering from the ravages of the locusts. The Hamadán regiment was encamped here, and was loud in its complaints relative to pay and rations.

15*th*.—To Móhan, 42 miles N.

After 6 miles over the plain, the road again leads into the mountains for about 30 miles, after which it opens on another large plain interspersed with villages, among which is that of Móhan. The locusts were here also busily employed in destroying the crops. There is a fine Imám-zádah close to the village.

16*th*.—To Kirmán, 24 miles N.

After quitting the gardens and extensive cultivated tracts of Móhan, we bent our course over a desolate plain, which continued till within a couple of miles of Kirmán, where we arrived about mid-day.

Kásim Khán arrived a few days afterwards, and had some difficulty in escaping the vengeance of the prince; but he, at length, managed to get off by paying a heavy fine, and another was also levied on his brother, the major of the regiment.

We remained in this city till the 24th of July, when we again set out for Bákin, before described, in the train of Prince 'Abbás Mírzá, who was escorted only by a body of cavalry, and some artillery, the infantry having been all sent forward.

25*th*.—To Mashís, 28 miles N.N.W.

This march I have also previously described. Here we remained till the 4th of August, when we marched to Mahának, also formerly noticed, as well as Súr-khan, at which place we encamped on the 5th.

August 6*th*.—To Zeïm, 24 miles N.W.

Route over high barren hills. Water at 4, 8, and 12 miles. At the second distance mentioned, we passed a small village, and encamped in a valley called Zeïm.

7*th*.—To Pareïz, 16 miles N.

Road over rugged mountains. Pareïz is a considerable village, romantically situated in a deep glen, the remainder of which is completely filled up with gardens, a rapid little stream forcing its way through the midst of it. Here we halted a day.

9th.—To Korán, 16 miles W.N.W.

Among mountains for the first 3 hours; then an extensive plain; passed a village at half a mile, and a second at a mile from Pareïz. Encamped near the village of Korán. We remained here some days.

16th.—To Shutur Déh, or Déh Shuturán,* 32 miles N.W.

Road along a plain, barren, dreary and desolate. Brackish water at 22 miles, and a small stream at 26. Encamped between two small villages about 1 mile distant from each other, the nearest being called Shutur Déh.

17th.—To Shehri-Bábek.†

Continued along the plain; water at 1 and 3 hours. The town of Shehri-Bábek, near which we encamped, is surrounded by a high wall and trench, about 1½ mile in circuit, but does not appear capable of defence, being commanded by two small hills, one to the N., the other to the S. of the fort. There are many gardens and extensive tracts of cultivated ground around this place. We here found the Khásseh, Marághah, Kará-tágh and Khemseh regiments.

19th.—To Robát, 20 miles N.W.

We marched from Shehri-Bábek this morning, together with the four regiments of infantry, still along the plain. Water at 4 and 8 miles. Robát ‡ is a small village, with very brackish water.

20th.—To Herát, § 24 miles W.N.W.

Road similar to that of yesterday. After marching 8 miles we crossed a very salt stream, which here separates the provinces of Kirmán and Fárs. Herát is a fine village, and the country for some distance is covered with gardens and corn-fields, and well supplied with good water.

22nd.—To Bálá-báyán, or Shírín Báyán, 24 miles N.

Crossed the plain; after which we entered, at 8 miles, some low hills, which continued for the same distance. No water during the march. Bálá-báyán is situated near the borders of a salt desert, which we had skirted for the last 8 miles.

23rd.—Siryán, 23 miles, N.W.

For 16 miles a plain; afterwards hills. No water till we arrived at the camp, near the village of Siryán, which is picturesquely situated in a mountain-gorge, and the adjacent country well cultivated.

24th.—To Boniyát, 16 miles N.W.

The road lay up a narrow valley, through gardens and corn-fields. We passed three small villages, and encamped on the banks of a stream near a fourth, called Boniyát, where the valley

* Camel-ville.—ED. † Bábek's Town.—ED. ‡ Hall or Caravanserai.—ED.

§ The Khói regiment here joined us. The remainder of the army was distributed in Yezd and Kirmán. This place is called Heráti Karrah.—GIB.

widens considerably. There is an Imám-zádah situated about half way up an adjacent mountain, enclosing a rock, out of a cleft in which gushes a little rill of very cool and clear water. The Musselmán legend is, that 'Alí once passing this way and feeling thirsty, smote the rock, from which the water burst forth, and has continued to flow ever since. This Imám-zádah is surrounded by a grove of large and apparently very aged trees, planted, probably, when the building, which is itself ancient and ruinous, was erected. The trees are chinár (plane), ash, elm, and walnut trees. We halted here a day, and 'Abbás Mírzá gave the troops permission to plunder a very fine and well-stocked garden belonging to the Vazír of the Prince, Governor of Shíráz.

26*th.*—To Girdáb, or Déh Bíd,* 30 miles, N.N.W.

At 6 miles a small half-ruined village, and at 12 miles a second. The country is hilly and uncultivated, though not badly supplied with water. We encamped on the side of a mountain, round whose base a stream winds near the small village of Girdáb.

27*th.*—To Píri-Chóbán,† a small village, 24 miles N.N.W.

The country the same as yesterday, but better supplied with water. We passed two villages, one at 4 and another at 8 miles. Camp near a river.

28*th.*—To Kilíd ‡ and Surmah, two adjoining villages, 23 miles N.N.W.

Road mountainous. We passed several valleys covered with pasturage, in each of which were many small springs. At 21 miles we entered a plain, in which is situated the small village of Kilíd, surrounded by gardens, corn-fields, &c. Here we halted for a day.

30*th.*—To Ābi-Déh,§ 20 miles, N.W.

Road hilly for 6 miles, when it enters a plain: 2 miles further we passed a village called Chinár. There are many other villages in the neighbourhood of Ābi-Déh, each encircled by its own gardens and cultivated ground. Here we also halted for a day.

September 1*st.*—To Shúli-Zen 16 miles N.N.W.

Along a dreary plain, destitute of water. There is a good caravanserai adjoining the small village of Shúli-Zen.

2*nd.*—To Yezdikhwást,‖ 16 miles N.W.

We continued along the plain, and encamped in the deep ravine, upon the edge of which the village is built. This place is on the high road between Shíráz and Isfahán; as were also the two last menzils¶ on the winter road between those cities. The inhabitants having fled, the Prince permitted the Sarbáz,**

* Watergirt, or Willow-ville.—Ed. † Saint Shepherd.—Ed. ‡ Key.—Ed.
§ Village-water.—Ed.
‖ Pronounced Yezdekhást; the *w* is not heard.—Ed. ¶ Halting-places.—Ed.
** Soldiers.—Ed.

&c. to plunder whatever remained in their houses, and to cut down any crops that had not been reaped as forage.

3rd.—To Maksúd Luh,* 10 miles N.

Over a plain; at 7 miles passed a good caravanserai and ruined village. Encamped on the plain.

4th.—To Komishah, 20 miles N.N.W.

Road similar to that of yesterday. Encamped within 2 miles of the half-ruined city of Komishah; halted a day.

6th.—To Sháh Sayyad Allah Akbar, 8 miles N.

We again left the high road to Isfahán, and marched up a valley for 8 miles, where we encamped near an Imám-zádah.

7th.—To Pékán, 24 miles E.N.E.

Over a plain, passing a village at 16 miles, called Názer-ābád, and a second, 2 miles W., named Mohammed-ābád, both surrounded by gardens and cultivated ground. Pékán is a large village, but its water is rather brackish. Here we remained for ten days, to prepare the men for parading before Fat-h 'Alí Sháh, who was at Isfahán.

16th.—To Rahm-ābád, 24 miles W.N.W.

Road across the plain; a village at 4 miles, and at 10 miles we entered a gorge of the mountains. At 20 miles we descended into an extensive plain studded with numerous villages; of which Rahm-ābád is one of the most considerable, but the water is brackish.

17th.—To Zún,† 16 miles, along the plain.

At 10 miles we passed the large village of Khoraskhán, and encamped near the village of Zún, 4 miles E.S.E. of Isfahán, on the banks of the river Zend-rúd. The troops were halted here three days, and received a few kuruns pay each man. The monarch did not pay us a visit, however; but 'Abbás Mírzá rejoined us, having left the camp at Pekán to wait upon the king.

21st.—To Gaz, 14 miles W.N.W.

Passed the city of Isfahán; the road lay over a plain, affording a prospect of many villages. Gaz is a large village, with a fine caravanserai adjacent.

22nd.—To Múrchákhór, 22 miles N.W.

Still along the plain; halted near the large village of Múrchákhór. A good caravanserai adjoining.

23rd.—To Zoh, 20 miles N.W.

Over the plain for about 15 miles, when we passed a village, and entered a narrow valley in which Zoh, near which the camp was pitched, is situated. Here is also a caravanserai.

24th.—To Korúd,‡ 20 miles N.W.

Road up a valley; numerous springs during the march. Korúd, near which we encamped, is a large village built on the side of a

* The Goal (an Arabic phrase).—Ed. † Spelt Zán (?)—Ed. ‡ Apes (Ar.)—Ed

mountain, and the valley for several miles from this is a continuation of gardens.

25th.—To Káshán, 26 miles N.N.W.

For the first 3 miles the road passes between gardens, and then continues through the valley, passing a large dam at 14 miles, built completely across the defile to reserve the water of the stream for irrigation. The path, for the most part, does not lead along the bed of the valley, but on the side of the mountains. We passed a caravanserai half way, and arrived at and encamped outside the walls of Káshán in the evening. The troops remained here some days, and six months' pay was issued. Here, also, it was intimated to them that they were to proceed to Khorásán, and many desertions took place in consequence. The Khemseh regiment was ordered home, and the Khássah, Marághah, Kará-tágh and Khói regiments, together with six guns (six-pounders), and about 1000 horse, formed the army with which we were to penetrate into that province then in open rebellion.

October 2nd.—To Ābi-Shírín,* 24 miles N.N.W.

Over a sandy plain; a village at 6 miles, a second at 12 miles, and a third at 16 miles. Many others in view. Camp near a small village called Ābi-Shírín, where, however, all the water was extremely brackish.

3rd.—To Sír Ajá, 24 miles N.

Marched along a barren plain; a small village at 6 miles, after which no water. Camp near a petty village. Water brackish. Halted for a day.

5th.—To Salám-ābád, 25 miles N.N.E.

Still over a plain, intersected occasionally by ranges of low hills, with a distant view of Elburz and Mount Demávand towering far above the rest. At 16 miles we crossed a salt river, and encamped near the petty village of Salám-ābád; none but very brackish water to be had.

6th.—To 'Alí-ābád, in Varámín, 48 miles N.N.E.

The march was begun an hour before midnight, and we entered a desert, covered in many places with salt, which we continued to traverse for 45 miles without a drop of fresh water, till, at that distance, we reached a stream on the borders of the district of Varámín, into which the men, parched, weary and exhausted with fatigue, eagerly threw themselves to assuage their raging thirst. After having halted till they had drunk as much as they wished, we continued on for 3 miles further to the village of 'Alí-ābád, where we arrived at sunset, having been about nineteen hours on the march. As near 400 of the men had not come in at night-fall, and all were extremely fatigued, we halted here the

* Shírín's Water, or Sweet Water.—Ed.

next day. During the night, the stragglers arrived, with the exception of about fifty, who never joined us, and had probably, on arriving at Varámín, discouraged with such a severe march, deserted and taken the road towards Āzerbaïján.

8*th.*—To Khoweïr, 16 miles E.N.E.

Marched through a fertile and well-cultivated plain, covered with villages and gardens. Encamped near the village of Khoweïr. Halted again two days.

11*th.*—To Eïwáni-Keïf* 20 miles N.E. by E.

After 2 miles, the road passes among very low ranges of sand-hills for 8 miles more, when it crosses the extremity of the salt plain. The village of Eïwáni-Keïf is situated at the foot of Mount Elburz, and is celebrated for its figs and other fruits. We met with fresh water at 2 and at 16 miles.

12*th.*—To Kishlák,† 22 miles E.

Crossed the plain for 5 miles, when the road entered the pass of Sar-darah,‡ through which we marched into the plain of Khár, and encamped near the village of Kishlák: here we remained for nine days.

22*nd.*—To Déh Namak§ 16 miles E.N.E.

Over a vast plain, studded with villages for the first 8 miles; at 10 miles, crossed a salt stream, running from N. to S.; and 2 miles further, a second; the road skirting Mount Elburz. We encamped near the caravanserai and wretched village of Namak; water brackish.

23*rd.*—To Lasgird, 26 miles E.N.E.

Our road lay along the plain for 10 miles, when we crossed a deep ravine, and ascended some low hills; a view to the S. of the Salt desert, stretching out to a boundless extent. At 16 miles we crossed a bridge over a deep chasm or ravine, which is here considered as separating 'Irák from Khorásán. In the course of the next mile and a half we crossed two similar ravines. The village of Lasgird is situated in a valley; it is built upon the top of a high artificial mound, and well calculated to repel any attack from the Turkománs, who have been frequently known to extend their marauding expeditions as far as this.

24*th.*—Simnán, 20 miles E.N.E.

The valley gradually, in the course of 2 or 3 miles, widens into a plain; water at 6 miles; and at 8 miles we passed the large village of Surkyek Déh, with many gardens and corn-fields adjacent. Simnán is a city about 2½ miles in circuit, but half in ruins; it is surrounded by a wall broken down in many places. The neighbourhood is well cultivated, and yields an abundant

* Or Kíf, Pleasure Hall.—ED.
† Winter quarters.—ED.
‡ Valley-head.—ED.
§ Saltville.—ED.

supply of corn, fruits, &c. The bázárs are narrow and poorly stocked. We halted there for two days.

27th.—To the caravanserais of Akhíyán, 24 miles E.

For seven miles our course lay across a gravelly slope; after which we began to ascend the mountains, through which we marched till we arrived at the caravanserais in a gloomy uninhabited valley, surrounded on every side by high and barren mountains. The supply of water is from two small springs. This place has often been the scene of Turkomán depredations, and is much dreaded by the pilgrims travelling to and from Meshhed.* After leaving the cultivated lands of Simnán there was no fresh water to be met with till we reached the camp.

28th.—To the caravanserai of Kóshlar,† 16 miles E.N.E.

Road mountainous for the first 10 miles, when it enters the great plain of Dámaghán. There are many villages scattered over the plain; and, after the first 8 miles, there is water in abundance. We encamped near the caravanserai.

29th.—To Daulet-ābád, 8 miles N.E.

Along the plain. Daulet-ābád is one of the best built little forts that I have seen in Persia: its chief had held out successfully against both Isma'íl Mírzá, governor of Bostám, and Bahman Mírzá, of Simnán; and he now offered 'Abbás Mírzá 30,000 tómáns if he would ensure him in the government of his own district, of which he was hereditary chief: the Prince promised to do so; but afterwards insisted upon his accompanying him to Khorásán with a body of his men; he could not refuse; and we had not been long in Khorásán before we heard that the Prince's governors of Bostám and Simnán had again attacked the place; and the chief himself and his best men being with 'Abbás Mírzá, it was soon reduced.

30th.—To Dámaghán, 12 miles N.E.

Still along the plain, having a prospect of many villages. The city of Dámaghán, near the walls of which we encamped, is about the same size as Simnán, but in even a still more ruinous condition; not a quarter of the space within the walls being occupied by habitable buildings. We halted here for two days.

Nov. 2nd.—To Déh Mullá, 24 miles E.N.E.

Route over the plain; many villages in sight during the march. The large village called Déh Mullá, and a good caravanserai, were near the camp.

3rd.—To Sháh-rúd,‡ 12 miles N.E.

The plain gradually becomes narrow as it approaches the town of Sháh-rúd, which is about 2 miles in circuit, is populous, has a

* "The place of martyrdom" of the Imám Rizá, properly Tús.—Ed.

† Birds.—Ed.

‡ King's River.—Ed.

middling bázár, and is walled; the surrounding country to a considerable extent being either laid out in gardens or under tillage. We halted here two days.

6th.—To Farrukh-ābád, 8 miles N.E.

This place is situated upon the borders of the desert; here is a ruinous village, a good caravanserai, and abundance of water; and it is usual for caravans leaving Sháh-rúd, to make this a day's journey, both to collect stragglers and shorten the road to Meï-omíd. We followed their example.

7th.—To Meï-omíd, 32 miles E.N.E.

The desert is level for 12 miles, after which there are low undulating hills for a similar distance, when the road again runs over a flat barren plain. No water was to be found till we arrived near Meï-omíd, which is a considerable village, walled round, with a good caravanserai, and a number of gardens near it. It is situated near the foot of a range of mountains.

8th.—To Dáskirt, or Dásgird, 32 miles E.

The usual route from Meï-omíd is direct to 'Abbás-ābád, but as this would oblige us to make another march of 48 miles without water, except the small supply we had now daily carried with us on camels, it was thought best to proceed to-day to Dáskirt, which lies considerably to the right of the direct line. For 4 miles we marched across the plain, and then entered among hills for 16 miles; after which we again opened upon a plain, occasionally intersected by very low ranges of hills and extremely deep ravines. After the first 4 miles, we met with no water. We halted here a day: this is a fine village.

10th.—To 'Abbás-ābád, 24 miles N.E.

Through a dreary wilderness, whose flatness was occasionally diversified by low sand-hills. The village and caravanserai of 'Abbás-ābád were erected by Sháh 'Abbás the Great, for the benefit of caravans crossing the desert; he carried off twelve Georgian families, and settled them here, under the severest penalties if they attempted to desert the place; and their descendants continue to inhabit the village to this day, and have still a marked Georgian cast of countenance. The whole of this desert, from Sháh-rúd to Mázínán, is continually infested by Turkománs; and, as but little ground can be cultivated from a small rill which flows from the only spring situated within the walls of the village, the inhabitants are often forced to traverse the desert in order to purchase provisions for their own consumption and for sale to the caravans, and thus fall a prey to these kidnappers, so that there is scarce a peasant in the village who has not got a sad story to tell of some one of his family who has been carried off into hopeless captivity. Nevertheless

these people appear far more clean and comfortable, both in their houses and dress, than the generality of the Persian rayás;* this may be accounted for by their paying no taxes, and by the profit they make by selling provisions to travellers, which, indeed, it is only fair that they should gain, when they have to make such long and dangerous journeys to obtain them. The Turkománs, however, have never yet succeeded in capturing the little fort.

11*th.*—To Mazínán, 24 miles E.N.E.

Still over the desert; some brackish springs at 4 miles, after which no water till we arrived at the camp near Mazínán. This desert abounds in deer and wild asses; and for the last three or four stages, several had been hunted down or shot daily, which was no difficult matter where there were such a number of horsemen to intercept them in every direction, who also could take aim and fire their guns at full gallop; but for a fair chase, the wild ass is a most difficult animal to run down; indeed it is said that no horse can overtake him. The Persians eat the flesh of this animal, esteeming it equal to venison, which it resembles in flavour. Here we halted a day.

13*th.*—To Surkhán, 12 miles E.N.E.

We marched along the plain, found water at 6 miles, and encamped near the small village of Surkhán. It may be observed, that every village in Khorásán is walled; as otherwise they would never be able to resist the attacks of the Turkománs.

14*th.*—To Riváṭ,† 11 miles E.

The road over the plain; passed the village and caravanserai of Mayah at 4 miles; many others were in sight during the march. Riváṭ is an indifferent village.

15*th.*—To Sabzawár, 20 miles E. by N.

Road similar to that passed yesterday, with a village at 10 miles. The city of Sabzawár is about 2½ miles in circumference, contains an ark (citadel), and is surrounded by a single high wall and trench. There is a good bázár, and the town appears to be populous. The surrounding country presents the appearance of a bleak, open, uneven down; there being, except in the very few adjacent gardens, scarcely a tree to be seen: the prospect was particularly cheerless when viewed from a tent at this season of the year. But these downs, though not favourable to fruit-trees, are said to afford an abundant harvest of grain. We remained here eight days.

24*th.*—To Aḥmed-ābád, 14 miles N.N.E.

At 4 miles we passed the large village of Bedan, found water at 8 miles, and at 10 miles, entered the hills; passed another village at 12 miles; that of Aḥmed-ābád is situated in a small valley.

* Ri'áyá, *i. e.* subjects, commonly thus abridged.—Ed. † Rivad.—Gib.

25th.—To Mishkan, 18 miles N. by E.

Over hills for 2 hours, when the road passes the small village of Kásh, and again crosses a plain. Mishkan is a considerable village.

26th.—To Yún,* 10 miles N.

Over hills for 6 miles, then wound through a valley in which is situated the village of Yún. The troops halted here three days.

30th.—To Ḥájí-ābád, 12 miles N.E. by E.

Over hills for 2 hours, after which we entered a narrow valley, near the further extremity of which is the village of Ḥájí-ābád. Fine pasturage throughout the march, and water in abundance.

Dec. 1st.—To Sulṭán Maïdán,† 4 miles N.E. by N.

Marched over a hilly country 4 miles, when the troops encamped within 2 miles of the fort of Sulṭán Maïdán, separated from it by a low range of hills. On the night of the *2nd*, 300 men from each corps, and our little train of artillery, were marched down, and entrenched before Sulṭán Maïdán.‡ It is unnecessary, and would be tedious, to enter into a detailed account of the siege; I shall, therefore, merely mention that, on the 4th, an attempt to storm the place was made,§ in which the troops were repulsed, with a loss of about sixty men killed or wounded; and that, on the 10th, the fort was surrendered.

11th.—To Burj, 8 miles E.S.E.

Marched over a rugged and uneven plain, covered with pasturage and interspersed with villages; encamped near that of Burj.

12th.—To Girdbálá, 20 miles E.S.E.

Eight miles along a plain, affording abundance of pasturage, and well watered, with a prospect of several villages; through a narrow valley for 4 miles more, and then over hills for nearly the same distance; when the road opens upon the extensive plain of Níshápúr, with many villages scattered over its surface. We encamped on the borders of the plain, between two villages, called Girdbálá and Robáṭ.

13th.—To Níshápúr, 8 miles E.

We marched across the plain to the city of Níshápúr, near which we encamped. This town is about 2 miles in circuit; but its walls enclose many ruins and vacant pieces of ground upon which buildings once stood: its bázárs are but indifferent. On the following day the troops were quartered in the town, and on the 18th 'Abbás Mírzá, with the artillery and Kháṣṣeh regiment, proceeded towards Mesh-hed. We remained till the

* Youne.—GIB. † "Sultan's Plain:" Meïdán or Maïdán.—ED.

‡ Sulṭán Maïdán at this time was in the possession of Riẓá Kulí Khán, of Kúchán, the most powerful of the rebel chiefs in Khorásán.

§ One of the British sergeants was killed.

10th of January, and then followed the Prince, leaving the rest of the army at Níshápúr. Our first day's journey was to Khádam Khá, 16 miles E.N.E., along the fertile and populous plain of Níshápúr. Khádam Khá is built upon the top of a steep hill, at the base of which there is a fine Imám-zádah, and a great extent of gardens and cultivated ground; the village, besides being strongly situated, is surrounded by a high wall; and though the city of Níshápúr itself has often been taken by the insurgent chiefs, this place has never yet fallen into their hands, though defended only by the villagers. There is also at the foot of the hill, a good caravanserai.

Jan. 11*th*, 1832.—To Sheríf-ābád, 28 miles E.

For 10 miles along the plain; after which the road runs between and over hills, each successive range overtopping the last. At 16 miles there is a good caravanserai. There was no want of water during the march. Sheríf-ābád is a small village, situated in a gloomy little valley, which has often been the scene of Turkomán depredations: there is a caravanserai adjacent.

12*th*.—To Mesh-hed, 20 miles N.

Mountain towering above mountain for the first 10 miles, when we commenced a gradual descent, and reached the plain at the end of 6 more. The city of Mesh-hed has a striking appearance from a distance; the walls embracing a circuit of near 7 miles—the gilded dome and beautiful minarets of the mosque, which encloses the mausoleum of Imám Rizá, together with some other sacred edifices erected in different parts of the town—have a picturesque effect; but, on passing through the gates, the traveller is much disappointed—at least one half of what was once the city being either encumbered with ruins, or laid out in gardens and corn-fields.

It would be uninteresting to enter into a circumstantial and prolix history of the various events which took place during the ensuing spring and summer; I shall therefore merely observe, that 'Abbás Mírzá reinforced by another division of his army under his son, Karamán Mírzá, was, partly by force and partly by intrigue, completely successful in reducing to obedience the rebellious chiefs; taking the strongholds of Amír-ābád, Turshiz, Kúchán, Serakhs, and Turbat Haïderí,* and gaining possession of the persons of the most turbulent chiefs.

In December, 1832, the British detachment left Khorásán with four regiments, and began its march to Tabríz, which it reached in March, 1833. But, as my intention is merely to give a short itinerary of our route as far as Mesh-hed, I shall pass over this journey in silence.

* The sepulchral chapel of Haïder.—Ed.

The length of many of the marches may seem almost incredible in such a warm climate as that of Persia is for the greater part of the year, especially as they were all made by day; but it will be found that there was often no resource but to push on to the regular halting-place, or to encamp halfway in some place destitute of water; and the men themselves would always have preferred the former alternative to suffering from thirst, for the peasantry of Persia are inured from infancy to long journeys on foot, either from residing in villages often standing alone, and generally at a considerable distance from each other, or, if the soldiers belong to the I'liyát tribes, from constantly wandering about with their flocks and herds. Travellers who have viewed, from an elevated point, any of the great plains of this country, cannot but have observed that the villages look like so many small dark spots scattered, few and far between, over the brown surface of the vast and dreary wilderness: so that the necessity of conveying the produce of their lands (which is usually carried upon asses) for sale or barter to distant villages, or to towns still more remote, renders the rayás as hardy and persevering a race of pedestrians as is perhaps anywhere to be met with.

XI.—*An Account of the Curia Muria Isles, near the South-Eastern Coast of Arabia.* By the late Dr. Hulton, of the Indian Navy.

During our survey of the south-eastern coast of Arabia, in the months of February and March, 1836, we continued amidst the group which has for the last three centuries been called "the Curia Muria* Islands." They lie off Sherbadhát, and appear to be a continuation of the chain of primitive mountains which passes through Morbáṭ and Ḥásik. They are five in number, and are named Ḥelláníyah, Ḳarzáwet, Jebelíyah, Soda, and Ḥásikí.

Ḥelláníyah,† which is situated in 17° 33′ N., 56° 6′ E., is the only one of the group at present inhabited. Its general appearance is that of perfect sterility. With the exception of a few salt-water shrubs which usually fringe the small sandy bays, not

* Probably Khuriyán Muriyán: as should be read instead of Khartán and Martán in the MSS. and Ed. of Idrísí. Though transcribers might easily put *t* for *y*, the proper pronunciation of the names was, no doubt, preserved by the natives, from whom the Portuguese navigators got the Curia Muria of our maps. The omission of the final *n* is common in Asiatic dialects: these names may therefore be safely written and pronounced خريان مريان Khuriyán Muriyán.

† Small goat-isle.—Ed.

Sketch of

THE

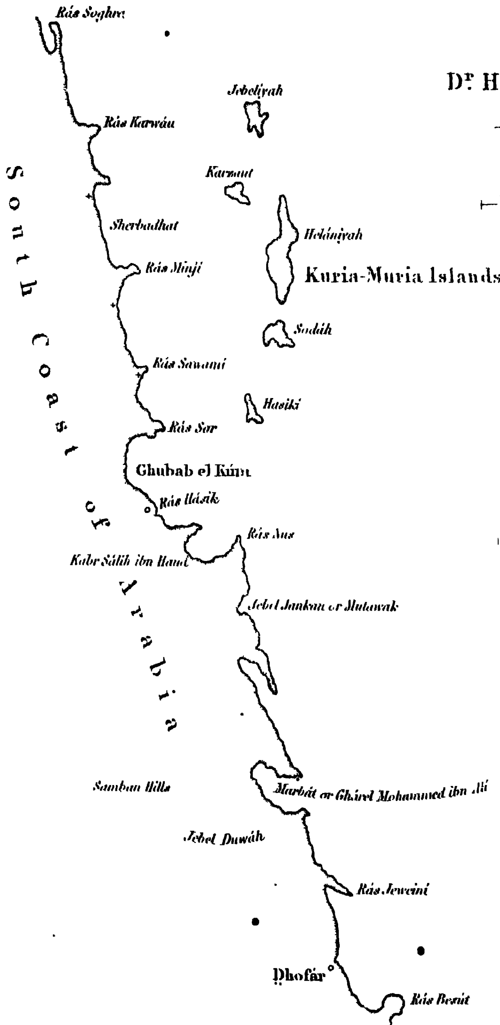
KURIA-MURIA ISLANDS,

to illustrate

Dr. Hulton's Paper.

5 10 20 30 40

Nautic Miles.



a tree is to be seen above the coarse gravel which forms the flat land extending from the sea to the base of the hills. The declivities of the mountains are, if possible, more naked. Even in the most favourable situations there is barely herbage enough for the support of a few wild goats.

About the centre of the island, the hills rise into a cluster of peaks, the highest of which was computed, by trigonometrical measurement, to be 1510 feet above the level of the sea. From them, smaller hills run down in all directions, preserving, in most cases, the form of interrupted ridges. At the eastern end, the land assumes a different shape. A perpendicular headland, 1645 feet in height, boldly projects into the ocean; and for some distance westwards, presents a continued mass of table-land, accidentally heaved up, as it were, at the end of the island. With the exception of this high land, the rest of the island is chiefly composed of granite varying somewhat in its structure and in the proportion of its essential ingredients, which also occasions a variety in its colours. The most interesting feature, geologically speaking, in this stratum of granite is the manner in which most of its ridges are surmounted by a dark-coloured stone, allied in character to trap rocks, and particularly to greenstone. This passes through the body of the hills in the form of dykes. The same rock is found abundantly in the shape of seams running in all directions through the granite, as if injected, when in a fluid state, into its fissures.

At a distance these dykes and seams look like a dark shadow along the summits of the hills. Their direction seems to have been occasioned entirely by the disposition of the granite ranges themselves. They vary from a fine vein of a few inches to a stratum of 18 or 20 feet in breadth. In their constituent parts they differ no less materially. Most of them have the simple structure of greenstone, and hornblende appears to predominate; but by an intermixture of feldspar and quartz, in greater or less quantity, rocks of a very different character result. In some instances the feldspar is disseminated in the form of crystals, communicating a porphyritic structure; in others, quartz is abundantly intermingled, giving the stone more the appearance of granite. In this latter case, there is a tendency in the rock to diffuse itself more extensively through the granite bed, and lose its peculiar character. In fact, it appears by the accession of feldspar and quartz to pass gradually into granite itself, and merely differs, so far as the eye can judge, in its colour, which, from the presence of hornblende, becomes darkly speckled. Both in this and the granite found here, mica, if not altogether wanting, is very rare. The eastern end of the island is composed of a secondary limestone pretty regularly stratified towards the sea.

It contains a few fossil shells, but is principally remarkable for its proximity to the granite and its greater elevation above the sea. Its substance is nowhere intersected by veins of either granite or greenstone.

There is abundance of water, but all of it is more or less brackish: the best is found at the eastern end of the island, in a well dug, as the natives informed us, many years ago by the crew of a European ship. We frequently found small pools of salt water among the hills, 400 or 500 feet above the level of the sea.

Wood is very scarce in every part of the island, and there is barely enough to supply the wants of the inhabitants and the crews of a few boats that now and then touch there. There are a few tamarisks, but they are never used for fuel, as the smaller branches, when cut into slips, answer pretty well for making fishing baskets. For this purpose, however, the twigs of the sammah-tree, which grows in Morbáṭ and on the opposite coast, are preferred.

Ḳarzaut, Aḳarízaut,* or, as it is usually called by Europeans, "Redondo," † is a small rocky island, formed of a greater and smaller cone—the greater being about 210 feet in height. It consists exclusively of granite, of a reddish colour and a fine crystallized structure.

Soda,‡ which ranks next to Ḥellániyah in size and elevation, is situated about 6 miles to the westward. It was inhabited by a few families at no very distant period, as is proved by the remains of habitations, and a well, still in a fair state of preservation, but its water is brackish. They appear to have had a few goats and fowls. We were told that the island had suffered from the Jawásimí pirates, who carried off more than half of its inhabitants. The remainder, being too weak to defend themselves, took refuge in Ḥellániyah, where one of them, then old and infirm, was still surviving.

This island is a huge shapeless mass of bare rock, rising abruptly from the sea. It consists of granite, similar to that of Ḥellániyah, though not quite so distinctly marked. At its eastern end, and in the central part, it is dark grey, traversed by considerable veins of a light colour in various directions. At its western side, there is a mixture of red and grey granite in various proportions, the former generally preponderating.

There are a few bushes of tamarisk growing near the ruined village; but, with the exception of one or two small species of

* Gurzowt or Agaruzowt.—HULT. This is probably a compound.—ED.

† "Round," Portuguese.—ED.

‡ Suadiê (Suwádiyeh) of the Portuguese.—ED.

zygophyllum, which spreads itself over any sandy spot, and the arák-shrub,* all is bare stone and gravel.

Jebelíyah,† the easternmost island of the group, appears at a distance to be a small collection of roundish white and pointed hills, the highest of which has an elevation of about 560 feet, and is nearly in the centre of the island. On a nearer approach, two or three detached islands of bare rock, and many small patches, scarcely emerging from the sea, present themselves. The whole island is perfectly barren, and not a drop of fresh water is to be found in any part of it. Being thus unfit for the habitation of man, it is a favourite resort of sea-birds; particularly the gannet,‡ which when we first landed seemed inclined to dispute the ground with us. It lays one or two eggs, of a light-bluish tint, upon the bare ground, merely clearing away the larger stones and collecting together a quantity of small gravel. The obstinacy with which these birds defended their nests made them an easy prey; and some of the crew said they were an excellent dish. We found their eggs palatable, though the albumen has not the consistency of that of the domestic fowl.§ When suddenly surprised, it was not uncommon for these birds to disgorge a half-digested fish from six to eight inches in length: their usual prey is the poor little persecuted flying-fish.

We found a few snakes, but not of a venomous kind: but we were sadly disturbed at night by hordes of rats. These do not differ from the common rat, and in all probability found their way hither from the wreck of some bagalá. The natives of Hellání-yah told us that, many years ago, two bagalás were cast on the island, the crews of which all perished. In confirmation of this we discovered four or five graves close to each other, and the skeletons of two persons who appeared never to have been buried. One of them we found in a small sheltered cave completely exposed to view—a scene which strongly suggested the melancholy reflection how fearfully painful must have been his latter moments, after having outlived and performed the last duty of interment to his wretched companions in misfortune!

In Jebelíyah and the detached rocks near it, which are of a dark-coloured granite, hornblende enters in considerable proportions. The island itself seems to be composed of porphyry and a species of porphyritic sienite, the colours of some specimens being rich and diversified. On its S.W. extremity the sienite is traversed in two places by a nearly vertical stratum of a red rock, which has

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* Salvadora Persica: the Rack of Bruce (Travels. vol. vii. p. 157), but not figured in his plate, which gives the Avicennia tomentosa.—Ed.

† Mountainous: pronounced Jiblíyah.—Ed.

‡ Sula alba, or Pelicanus bassanus; Soland goose.—Ed.

§ The writer had probably never seen plovers' eggs.—Ed.

much the appearance of feldspar and quartz in an intimate state of combination.

Hásikí,* the most western island, is about 13 miles from Soda, and 20 miles from the Arabian coast. It consists of two peaked hills, about 400 feet high, from which a succession of low hills run off towards the N., presenting at a distance the appearance of one low belt of land. In almost every respect it strongly resembles Jebelíyah, being thickly covered with gannets and divers. No fresh water, and scarcely a stick, can be found in any part of it. In its geological character it is nearly similar to Soda, though the reddish granite, which is common there, is here found to predominate almost universally; the rest being a compound of variegated granite and porphyry. This appears to undergo decomposition much more rapidly than the former; and weathering down into small angular fragments, it furnishes the gannets with materials for the construction of their nests. This, and their undisturbed possession of the land, may be the reason why here and at Jebelíyah only the gannets assemble in such countless numbers.

Hellánívah, as before stated, is the only inhabited island in the group; and its present population consists of only twenty-three individuals, who differ in nothing from the Arabs of the neighbouring coast. Their extreme poverty and scanty diet on fish may easily account for some want of bodily strength; but, though so few in number, and living almost as one family, they carefully avoid intermarriages between near relations, and thus preserve themselves from the mischievous effects, both to body and mind, which invariably result from such intermarriages. I purposely obtained the names of all the natives, with those of their parents to the third generation, and in not one single instance could I discover a matrimonial alliance within the limits we ourselves are enjoined to avoid. Their diet and manner of living are sufficient to account for their want of physical strength; to the sea alone can they look for subsistence, and they may truly be styled icthyophagi.

As they have neither boats nor catamarans, they can only catch fish by the hook and the basket. When angling they stand on a ledge of rock projecting into the sea. The choice of these stations is regulated by the wind, as fishing is only practicable on the lee side of the island. When they use the basket they sink it in the water about a fathom deep, and as a bait, tie a small quantity of fine sea-weed at its mouth. I have seen some of their baskets drawn ashore with from twenty to thirty fish of

* Or Ḥásikíyeh, *i.e.* the island belonging to Ḥásik. Hazquiê, according to the Portuguese missionaries, who visited it and Suwádíyeh in 1588. They were then inhabited by a few wretched fish-eaters, who dried their food in the sun for want of wood to make a fire. (Andrada, b. v. c. 2, p. 179.)—Ed.

different kinds in them. The prevailing kind was the pād-fish, the beauty and variety of the tint of which, when first taken out of the water, surpasses the changing colours of the dying dolphin. This fish the natives invariably reject, as their exclusively fish-diet obliges them to be most particular in their choice; and even those of the most approved sort—as, for instance, the rock-cod—when lean and out of condition, share the same fate. To ascertain their fitness, the stomach is torn open, and by an inspection of the mesentery the natives are enabled to pronounce upon the condition of the fish. Certainly all are not equally fit for food. While we were surveying Hellániyah the crew experienced some sickness, which the natives immediately pronounced to be caused by indulgence in eating a large species of mullet, which they called bi'á'. They told me that the crew of a boat, from Súr,* which touched there lately, had eaten a quantity of this fish, and had suffered in a similar manner, though more severely than we did. The symptoms are similar to those which characterize a febrile attack, without its excitement.

The habitations of the natives are perfectly wretched: a few loose stones heaped up in the form of a semicircular wall, with half a dozen dry sticks or fish-bones stretched across, over which a little sea-weed is loosely spread, form the greater part of their dwellings. In some instances a loose wall is thrown up opposite to a natural excavation in the rock; thus economizing labour and ensuring a better protection against the weather. In front of these miserable abodes there is generally a shed, formed by stretching a mat on four sticks: here the family keep their fishing-tackle, and spend their time during the heat of the day, if not actually employed either in fishing or procuring water and fuel.

The natives ascribe the present low state of the population to the cruelty of the Wahhábis, who, before they received a death-blow from the British force at Rás-el-Khaïmah† (an event of which the natives of this island are well aware), invaded their country. Their houses were destroyed, their scanty clothing torn from their backs, their goats killed, and some of their children forcibly carried away and condemned to perpetual slavery. It was in vain that the strongest representations were made by Mohammed ben 'Akíl to the Imám of Maskat: their children never were restored. This calamity befell them about seventeen years ago,‡ and they now point to a young man whose birth is made the epoch of that sad event.

By this invasion the population may have been greatly diminished, but its present reduced state appears to have been brought about by other causes also. At the eastern extremity of the island we found a vast number of remains, which seem to indi-

* In 'Omán.—Ed. † On the N.E. coast of Arabia.—Ed.
‡ A.D. 1819.

cate that the inhabitants must have been much more numerous, many years ago, than they could have been prior to the visit of the Wahhábís. There was one circumstance particularly which arrested our attention, and which had not been observed in other places—I mean their excessive carelessness as to the disposal of their dead. Skeletons were constantly found deposited in caves, with no other covering to screen them from view, than a slight wall of loose stones; and even this was often wanting. In one instance a hand was observed uncovered by the loose sand, and on gently pulling it upwards, the entire skeleton of a young woman was disclosed to view. The present inhabitants do not betray this shocking neglect, neither does it appear that in former times it was the case, for burial-grounds, disposed in an orderly manner, and with every appearance of antiquity, are by no means uncommon. That, at some period or other, a particular cause existed, which obliged them to deviate from their usual custom, seems at once obvious, and only one adequate cause can be assigned for their want of those feelings which are common to mankind in general. The dread of infection might render them timid, and produce an unwillingness to touch the dead, and many would be left to decay in the place where they had sought a refuge in their last moments. It may therefore be reasonably conjectured that, at some former period, a contagious disease visited the island, and swept away many of its inhabitants.*

Of the change of seasons here I of course cannot speak with any degree of confidence; unprotected, as these islands are, by any neighbouring land to the windward, it may be presumed that the S.W. monsoon acts here precisely as it does to the southward, and brings up the tremendous swell of the Indian Ocean. The natives confirmed this supposition, and added that heavy showers accompany its approach. In the N.E. monsoon a different phenomenon occurs: here the vicinity of the Arabian peninsula appears in some measure to counteract its general course, and though a tendency to blow from the N.E. prevails, still the winds vary to every other point of the compass. From the month of December to the middle of March we experienced a pretty regular succession of northerly and southerly winds; the former inclining to the W., the latter to the E. They continue to blow with extreme violence for two or three days, and then, their strength appearing to be exhausted, they yield quietly to the tendency of the N.E. monsoon, only however to go through a similar course in a few days afterwards, and thus perform a complete circuit of the compass.

These changes are decidedly influenced by the state of the moon, and the barometer foretells by its fall the approach of a

* It is odd that the writer did not notice the corroboration of his conjectures afforded by the traditional tale given further on.—Ed.

southerly, and by its rise that of a northerly wind, with an unerring accuracy. The thermometer is affected nearly in an equal degree. When the wind is from the S., the air, being replete with moisture, becomes milder, and ranges from 65° to 70° in the morning, and from 75° to 80° at noon. A copious deposit of dew takes place at night. When the north wind sets in, there is an immediate reduction of temperature, sometimes upwards of 15° or 20°; the thermometer sinking to 50° at sunrise. The atmosphere becomes dry and parching. Among the natives this wind is known as the "belád;" * and, to a certain extent, is dreaded for its insalubrity. It is the sudden change, more than any intrinsic bad quality, that has gained for it this evil repute; and the disease which it is said to occasion resembles pretty closely the well-known effects of the land-winds in India. At the commencement of both the northerly and the southerly winds, the atmosphere grows thick and hazy; but, on their subsidence, it again becomes beautifully transparent, showing the most remote objects with a distinctness and brilliancy seldom witnessed.

It is highly probable that these are some of the isles of Zenobius mentioned by Arrian (Periplus Maris Erythræi, p. 160); the more so as the tribe which now inhabits the whole coast of Arabia, lying between Rás-el-hadd to the N.E. and Cape Hásik to the W., is the Beit-Jenobí,† which, though far from large, is scattered over a vast tract of country.

By the Arabs on the south coast of Arabia these islands are usually called the Jezáïr Ben Khalfán,‡ so termed in honour of an enterprising family belonging to the great Mahrí tribe. The head of this family, Sa'íd ben 'Omar, ben Haat (?) ben Khalfán, possessed a small estate in the neighbourhood of Morbát called Howíyah, and by carrying on an active commerce, not only amassed considerable wealth, but extended his influence beyond the limited sphere of his own possessions. Having drawn together a numerous party of dependents, he made a vigorous attempt to possess himself of the government of Morbát. In this he failed; and was obliged to take refuge in Hellániyah. When his affairs had assumed a more settled aspect he returned to Howíyah, reserving to himself and his heirs the right of possession of these islands. His two sons and nephews, regarding these islanders as their hereditary dependents, conjointly claim the privileges of sovereignty over them, and occasionally repair thither for the purpose of collecting any money the inhabitants may have obtained for

* Land-wind?—Ed.

† Beit Jenobí, or House of Jenob, is probably the name of this tribe in the idiom of these Arabs, who would be called Bení Zeinob by others. The Greek Zenobius (Ζηνοβίος) has a still closer resemblance to the common Arab name Zeineb.—Ed.

‡ Ghalfan in the original: but there can be little doubt that the family of Khalfán, formerly very powerful in 'Omán, is here meant. See De Sacy's 'Chrestomathie Arabe,' iii. 357.—Ed.

supplying foreign vessels with water. These visits are always hailed with pleasure by their subjects, as they seldom fail to supply them with dates and other necessaries.

The following traditional tale, which is a favourite story among the Arabs, may throw some light on the early history of these islanders. I tell it as I heard it from an Arab:—

"Prior to the Mohammedan era these islands were peopled by the descendants of the rebellious tribe of 'A'd; and even after the greatest part of Arabia had embraced the doctrines of Mohammed, these islanders still remained obstinate in their ancient faith, and were religiously avoided by all true believers. In this state of things, they were visited by a mortal pestilence which destroyed every soul in the islands except one young woman. She remained alone, after all her friends had been snatched away, until an Arab boat, drifting by accident past the island, was seen and hailed by the miserable survivor. Her feeble motions were observed: but the nákhodá* had been warned against the contamination of infidelity, and steeling his heart against the access of more generous feelings, put to sea without affording the young woman any succour. One of the sailors, however, with more humanity and tenderness, letting his turban fall into the sea, made it an excuse for leaving the vessel, and swam on shore. He lay cold and insensible at the feet of the maiden, but her assiduous attentions soon revived him. The sequel was but natural; he became the founder of the present race of islanders." †

The islanders themselves say that their ancestors came from the neighbouring ports of Hásik and Morbáṭ, being driven from their country by intestine feuds; and they are persuaded that their emigration took place some centuries ago. Their language is certainly almost identical with the Shehrí, which is spoken by the tribes around Morbáṭ; and this again differs, as I understand, only in a very trifling degree from the Mahrí dialect. I was forcibly struck with the resemblance it bore to the Sokoṭrí language, especially in the pronunciation of one or two words which it is fruitless for a stranger to try to imitate.‡ Our pilot, who belonged to their neighbours, the Jenobís, attempted in vain to do so; and only excited the merriment of the bystanders by the contortions of his features.

* "Ship-master:" a Persian word.—Ed.

† That these unproductive rocks received their inhabitants from the adjoining coast is obvious; and had the writer been acquainted with the works of the Arabian geographers and historians, he would have known that the people of Haḍhramaut, Shehr, and Mahrah are derived by them from the infidel and rebellious tribe of 'A'd.—Ed.

‡ Their language is the unutterable Ehkilí, respecting some sounds of which M. Fresnel says (Nouv. Journ. Asiat., vi. 539), "Elle a des articulations...d'où résulte une grimace...fort ridicule."—Ed.

XII.—*Remarks on the Physical Geography of North America.* By C. S. Rafinesque. Philadelphia, April, 1840.

1. The physical features of the earth are the most permanent, while its political and ethnographical features are often very fluctuating, particularly in countries recently settled. Yet the physical geography of all regions has hitherto been much neglected, particularly that of North America.

2. Formerly, hardly any notice was taken of the mountains, table-lands and valleys of this continent. None but the largest lakes were roughly noticed in maps, and the streams were laid down at random in straight lines, as we may perceive by referring to maps even as modern as those published only forty years ago.

3. The public surveys even of a later date do not correct the whole of these errors: the course of some streams has indeed been rectified, and many smaller lakes have been laid down; but the mountains and hills, table-lands and plains, valleys and slopes, are hardly distinguished. The public surveyors are not required to do so, but merely to run lines and lay out square sections of land, which it is usual to represent as level or flat, although they may be full of inequalities.

4. It is only lately that levelling surveys have been required to trace the tracks of roads, canals, railways, &c.; and these, although greatly multiplied, do not extend to every part of the country. It was as late as 1818 that I mapped the whole course of the river Ohio, with all its hills, slopes, cliffs, bottoms, islands, &c.; before which the old map of Evans was the only guide; and even the valley of the Ohio, as bounded by hills on each side, and thus traced, has not yet been marked in all maps. It was only in 1832 that I drew for Tanner the hilly boundaries of the limestone plains of Kentucky, Ohio and Indiana, never before noticed.

5. The same results and want of information as to all the features of physical geography exist throughout America; and although large State-maps of nearly all the States have been published, they are all full of errors and omissions of this kind. Although great pains are taken to insert new counties and townships as soon as possible, the old hills, slopes and valleys, that have stood since the flood, are often neglected. It often happens that, where a large plain is delineated, it is a broken table-land, 1000 feet or more above the sea; where a single ridge is given, it may be broken into many with valleys and gaps.

6. I have now before me three large and recent maps, in four sheets, of Pennsylvania, North Carolina and Kentucky, showing a goodly array of mountains, ridges, valleys, &c., but omitting as many more that I know to exist, besides numberless hills, de-

pressions, small lakes and streams, &c.; and the same is the case in all our maps, with hardly any exception, even in the large county maps of New York, where the northern slopes of the Alleghanies are scarcely noticed.

7. In consequence of this neglect we do not yet know the mountainous features of North America, nor the configuration of the land: even the State surveys now in process for geology do not attend to mapping the hills and valleys; and it is quite recently that the Saranac Mountains west of Lake Champlain have been found to equal the Wapani, or White Mountains, to the east of it. The Unaka, or Iron Mountains, of North Carolina, likewise, have been found to be full of peaks exceeding those of the Wapani both in number and height, thus forming the two great ends and nucleus of the Alleghany chain to the N.E. and S.W.

8. It is owing to such neglect that a difficulty and collision has arisen on the borders of Maine and New Brunswick with respect to the settlement of the real boundaries between those States and Canada; and that many sources of future difficulties are in reserve elsewhere, between States, territories and adjacent possessions.

9. These facts, as well as the desire of improving geography by ascertaining the real features of the earth, ought to stimulate both Great Britain and the United States to study, delineate and lay down all the natural features of land and water in the Canadas and the United States, as well as in Boreal America and Origon.

10. Meantime, although the general outlines of this continent are well known, its natural regions are far from being traced with accuracy, either physically or geologically: but to fix the physical limits of different regions is properly an important branch of geography.

11. To detect, expose and correct all the mistakes of our maps and books of geography would be a waste of time, and might fill a volume. I must confine myself to the assertion of the fact that gross errors exist in all of them, and endeavour to trace the natural outlines of this continent more correctly.

12. The great regions of North America beyond Mexico are eight, although each may be subdivided into smaller sections: the former are—

1. The Boreal, or region of the lakes.
2. The Atlantic, or region of the littoral plains.
3. The Apalachian, or region of the Alleghanies.
4. The central region, or basins of the Mississippi, Missouri, Ohio, &c., and all their affluents.
5. The Ozark and Taos Mountains.
6. The Floridan and Gulf region of plains.

7. The Origon Mountains and region.
8. The New Albion region, from California to the Columbia river, &c.

13. All these regions have peculiar physical features, extent, climate, soil, productions, &c., and deserve to be studied separately, to have their limits well traced, their altitudes measured, and their peculiarities described; while at present our knowledge of them is extremely imperfect, even in the well-settled parts.

14. The Boreal region includes all the most northern parts as far as Canada and New England. It is eminently a region of lakes and their basins, with few mountains except the northern spurs of the Alleghanies and Origon. It includes myriads of lakes, large and small, and, being so vast, might easily be divided into the subordinate regions of New England and Nova Scotia, Canada, Labrador, Hudson's Bay, Mackenzie's River, Alaska, &c.

15. The Atlantic region extends along the Atlantic Ocean, from Long Island to Florida, narrow at first, but widening to the south, and blending with the 6th region. It has neither lakes nor watery shores; but, instead of them, swamps and sandy plains and shores. Mountains are wanting, and there are only a few small hills scattered widely apart. I have given a complete view of this region in my Atlantic Journal for 1833, and traced one of its great features, *the littoral islands*, by which it is lined, except in a few breaches of estuaries.

16. The mountainous region called Apalachian S. of the Potowmak, and Alleghany N. of it, is of vast extent, far exceeding the Alps and Carpathian mountains of Europe. It runs from N.E. to S.W., in numerous chains and ridges, with valleys, basins, gaps and even peaks innumerable. It was once a region of lakes, which have burst their barriers and left many large basins. It is highest towards the S.E., where it is called the Unaka (meaning the "first ground"), and now also the Iron Mountains, and sends lower spurs to the S.W., with a due western direction. The western range were the Wasioto mountains, now Cumberland, intruding into the western plains, as several hilly ridges do on the eastern side, and to the N.E. blending with mountains of New England and Canada by the Mattawan and Taconik ranges, also the Saranac to the N.E., that are an appendage of the Kiskanom, or Catskill mountains, merely separated from them by the Mohawk valley. It is in this region that discoveries in oreology, geology, and even geography, are yearly made, though not always recorded.

17. The large central region, miscalled the valley of the Mississippi (for it is not a valley), is rather a vast basin, open and drained to the S., consisting of hills, slopes, and plains. The

slopes of the Alleghanies and Ozark mountains form a great part of it, E. and W., being broken table-lands. The great peculiarities of this region are the huge streams, sunken into narrow valleys bordered by cliffs and bluffs, alternating with beds of former lakes.

18. The Ozark region, blending with the Taos mountains, E. of New Mexico, is as extensive as the Alleghanies, broken into hills, valleys and lofty plains. It is distinguished by knolls or conical hills scattered throughout, as well as arid plains, bare of wood, like the steppes of Siberia. These ranges are of course still less known than the Apalachian ridges.

19. The level region of Florida, Alabama, Louisiana and Texas, bordering on the Gulf of Mexico, might be deemed a prolongation of the Atlantic plains, if it were not for some peculiarities of its own; it has more hills, less swamps, except near the delta of the Mississippi; vast savanas, instead of pine-woods, some rocky islands, &c. The peninsula of Florida stretches far south, and partakes of the geological character of the Bahamas, having also been once a cluster of islands; and in Texas, where it blends with Mexico, the soil is drier and less sandy.

20. The region of Origon, the loftiest in North America, is deemed a continuation of the Mexican mountains, but not so volcanic nor dry. It includes many ranges running from S. to N., besides lateral chains; its northern termination is as yet hardly known, but gradually blends with the lake-region, being full of lakes and peaks, glaciers and basins.

21. The last region, or most westerly, is that extending from the N.W. archipelago to the end of California, thus including New Albion and Origon or Columbia, &c. It is a very peculiar region, bordered by a maritime chain of mountains and hills, with wide basins and deserts E. of it, to the foot of the Origon mountains. It is distinguished by aridity and a volcanic but often fruitful soil, with a milder climate than that of the Atlantic shores, &c.

22. Such are the main natural regions of this Continent, teeming with peculiar animal and vegetable productions; the woody tracts of the east gradually changing into mere groves west and north, and finally disappearing, as even California has but few trees. Glades, prairies or savanas, with the arid cactoïdes, gradually appear to the W., palms to the S., and naked rocks to the N., as I have described them in my Botanical Geography of North America, given in my new Flora thereof.

23. In Europe great attention has been paid lately to the study of mountains or oreology and oreography; the systems or groups of mountains have been well ascertained and described. Even something has been done towards it for South America and

Asia by Von Humboldt and others; but in North America *oreography* is as yet a blank, or the materials scattered through the works of fifty travellers are not yet embodied into one proper account.

24. I have collected these fragments and tried to render them available; but knowing the defects in the localities that I have visited from Canada to Virginia and Tennessee, I am fully aware that we only possess the outlines of other parts, and must wait for better geographers to enlighten us on the remote ranges of our mountains. I can safely assert that with respect to mountains all our maps at present are defective in the highest degree.

25. However, we may assume in a general point of view, and to help us in further inquiries, that there are five great systems, groups or ranges of mountains in North America:—

1. The Canadian and Labrador ranges.
2. The Alleghany and Apalachian, including New England.
3. The Ozark and Taos ranges.
4. The Origon ranges.
5. The Californian ranges.

26. Yet all these might be traced as winding, connected ranges, scarcely separated by rivers, or lakes, or table-lands. Thus the Canadian mountains, although cut through by the St. Lawrence, blend with the Saranak mountains S. of it. These link with the Kiskanom mountains at the falls of the Mohawk river. The Hudson river barely separates these Kiskanom mountains and the Shawangunk S. of them from the Mattawan mountains E. of these, from the Taconik mountains, their northern elongation, and from those uniting with the Wapani or White mountains at the source of the Connecticut river, which become the Green mountains of Vermont, W. of Lake Champlain, and send hilly spurs throughout New England to Gasperia and Nova Scotia.

27. On the other side, all the Apalachian ridges and slopes are connected at their origin. The hilly region of Ohio extends to Illinois, and links with the Ozark ranges S. of St. Louis, while it becomes a lofty table-land at the sources of the Mississippi. This wide table-land, broken into many basins, expands to the N.W. and unites with the Origon chain, which is quite linked with the Taos chain at the sources of the Missouri, Colorado, and Origon rivers. Even the Californian range links with them by many transversal hills and slopes.

28. Thus all the clusters and chains of mountains in North America might be deemed a single system, and being also united on the S. with the Mexican mountains and table-land, the whole is connected as far as Lake Nicaragua, where the first great transversal depression of land occurs in this continent. The second is at the valley of Choco, S. of Darien, and beyond it are

the real Andes, stretching from Cumana to Chili: while the mountains of Guyana, Brazil and South Patagonia, as well as Tierra del Fuego, appear to form as many separate clusters. Guyana is certainly insulated by the plains of the Orinoco and Marañon, but the Brazilian mountains may link with the Andes by the table-land of Parexis.

29. Such is a rapid sketch of American oreography, the details whereof might fill many volumes, and require 100 maps. It is a labour reserved for future more enlightened or enterprising generations, and we can only accumulate and compare materials as they are obtained. I have many to offer on the mountains of the United States at least, and maps made by myself.

30. I have always endeavoured to restore the old and good aboriginal names of our mountains, and I hope that this example will be scrupulously followed by future oreographers.

True Names of some Mountains in North America.

True Names.	Vulgar Names.
Origon mountains	Rocky, Stony, Chepewyan, Hollow Mountains.
Taos and Ozark	(Adopted).
Wasioto	Cumberland mountains, Chesnut to the N.
Sioto hills	Hills and knolls of Ohio, Indiana, &c., called Silver hills westward.
Wasioto hills	Hills and knolls of Kentucky.
Unaka mountains	Iron mountains of Carolina, the main Apalachians.
Tuskorora mountains	Tuscorora and Cove mountains.
	Blue-ridge in Virginia.
Kitaniny in Pennsylvania	Schooley in New Jersey.
Mattawan in New York .	South mountains in Pennsylvania.
	Highlands in New York.
Konestoga hills	Conestoga and Welsh mountains.
Shawangunk mountains	(Adopted).
Kiskanom mountains . . .	Catskill mountains.
Okuago mountains	Their N.W. end at the source of Delaware river.
Saranak mountains	Peru and Macomb mountains at the scurce of the Hudson river.
Takonik mountains	Adopted to the S., become the Green mountains to the N.
Wapani mountains	White mountains of New Hampshire 2° N.E., or most northern nucleus of the Alleghanies.
Yeona hills	Hope hills of Georgia, S. end of the Apalachians.

True Names.	Vulgar Names.
Kowita mountains	The Western Unaka range.
Konewango mountains	Chatauque Mountains, the N.W. corner of the Alleghanies.
Manatango mountains . . .	Broad mountains of Pennsylvania.
Juniata mountains	Backbone mountains of Pennsylv.

N.B. These mountains and many others are described in my Atlantic Journal, their elevations given, &c.; but the Unaka and Saranak have lately been found to be much higher, as here surmised.

[In some "Remarks on New Colonies," communicated to the Royal Geographical Society by the same author, but not published,—as the paper contains little that is new or that belongs properly to the Society's leading objects, the extension of geographical and ethnographical knowledge,—he observes, after pointing out the various parts of the Old World which present an opening for British colonisation, that in America, "New Albion, discovered by Drake, now called New or North California, to which the British nation has a distant claim, and which, as well as the peninsula of California, is useless to Mexico, may easily be purchased. If it is not, it will within twenty or fifty years be certainly invaded and colonised by the Texans, to fill it perhaps with slaves and make it a *cotton* country, for which its soil and climate are well suited." He also adds in a note, that "some Americans are already contemplating the invasion and conquest of this Tract."—Ed.]

XIII.—*Ethnographical Remarks on the Original Languages of the Inhabitants of the Canary Isles.* By Don J. J. da Costa de Macedo, Perpetual Secretary to the Royal Academy of Sciences at Lisbon.

[Don J. de Macedo having observed that Dr. Pritchard, in his able "Researches into the Physical History of Mankind," (Book iii. ch. 2, p. 32,) calls the ancient inhabitants of the Canary Isles, Guanches, and considers them as belonging to the same race as the Berbers on the African continent, thought it might be useful to show that those positions are controvertible, and that it may be proved from original authorities that neither of them can be maintained. In the original Essay, after introducing the subject by referring to a correspondence respecting it with Captain Washington, to whom this paper was addressed, he arranges his observations under the following heads.—Ed.]

The object of my remarks will be, 1st—to prove that the name of Guanches applies only to the inhabitants of Tenerife, and not to the natives of the other Canary Isles; and, 2ndly—that those

islands were inhabited by very different nations, who spoke languages differing extremely from each other.

1. The Guanches were the inhabitants of Tenerife.

Nicols* says that the people of Tenerife were called *Guanche*. Espinosa,† who wrote only 95 years after the conquest of Tenerife, and had himself found in that island some remains of the original nation, calls the inhabitants of that isle—Guanches. Abreu Galindo, who resided in these isles in 1591, and wrote the history of them, printed in 1632, and translated by Glas,‡ calls the inhabitants of Tenerife—Guanches; as does likewise Glas himself, who has not confounded them with the inhabitants of the other Canary Isles. Nuñez de la Peña,§ a native of Tenerife, also calls them Guanches. Clavijo‖ gives them the same name.

Glas, in speaking of Tenerife, says (p. 146), "the natives called it Chineche, and themselves Vincheni: how the Spaniards came to give them the name of Guanches is not known." But it may be thus explained:—the inhabitants of Tenerife called themselves *Guan*-chinet,¶ which is a compound word, *guan* signifying in their language "one person;" and chinet, or chinerf, "Tenerife,"—so that Guanchinet meant "a man of Tenerife," and was corrupted by the Spaniards into Guanche.**

The Guanches having, by their obstinate resistance to the Spaniards, to whose yoke, of all these islanders, they were the last to submit, and by their mummies, &c. obtained greater celebrity than any of the natives of the neighbouring isles, were, consequently, those who were most frequently mentioned; so that their name has been improperly applied to all the original inhabitants of the Canaries: but those of the other islands had also their own proper names, as those of Fuerte Ventura, for example, who were called Mahoreros,†† because their island, in the language of the country, was named Maxoráta [Makhoráta].

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* Bergeron, Traité des Navigations. Paris, 1629, pp. 220, 230 (from Hakluyt, ii. 2).

† Historia de la Aparicion y Milagros de la Imagen de Nuestra Señora de Candelaría, quoted by Clavijo in his Noticias de la Historia General de las Islas de Canaria. Madrid, 1772. i. Pról. and pp. 435, 437, 284, ii. p. 271.

‡ History of the Discovery and Conquest of the Canary Islands. London, 1764. 4to. p. viii.

§ Conquista y Antiguedades de las Islas de la Gran Canaria, &c. Madrid, 1676. p. 34, *et passim*.

‖ Vol. i. pp. 69, 128, 130, &c. &c.

¶ Identical with the Berber *wán*. The Spaniards usually substituted *gu* for the Arab *w*, so *Guad-el-Kebir* for *W'ád el-Kebir*.—ED.

** Nuñez de la Peña, p. 34. Clavijo, p. 69, from old writers on this subject.

†† And Maxoreros, or Majoreros [*i. e.* Makhoreros—*x* and *j* being in Spanish equivalent to the German, Celtic, and Greek *ch*, here expressed by *kh*]. Glas, p. 14; Nuñez, p. 8; Clavijo, vol. i. pp. 136, 185, 321, 331, 338, &c.

2. The languages of the seven Canary Isles differed entirely from each other.

Dr. Pritchard says (ii. 35), "there seems to be sufficient evidence, in what remains of the language of the Guanches, to prove their descent from the Berbers of Atlantica:" but he does not deny that "it is difficult to imagine how such a people as the Berbers, or Shulúh,* who are not known to have practised navigation, could find their way from Africa to the Canaries. But many seas have been traversed by rude and even by savage people under circumstances apparently still more unfavourable; and the first population of many countries, notwithstanding all that has been said to the contrary by some late writers, has certainly been spread along the sea-coasts and across seas, for traversing which the races of men thus dispersed appear to have been in general but ill provided."

In order to show the analogy which existed between the language of the Guanches (the inhabitants of the Canaries) and that of the Berbers, Dr. Pritchard † transcribes from M. Ritter's "Geography of Africa" a list of 28‡ words belonging to the languages of the Canaries, compared with those of the Berber or Shulúh languages.

Glas§ thought that the inhabitants of the Canaries came from Southern Barbary, which could easily be proved, according to him by the similarity of their manners, and particularly by the resemblance between their languages (except that of Tenerife) and the Lybian tongue. He adds that, though in the list of words used in the Canary Isles (Tenerife excepted) which he gives, and which amounts to more than 80, there are not more than 20 which can be positively derived from the Shilhah, which is the language spoken in the mountains of the empire of Morocco, Sús and other parts of South Barbary, whence objections to his hypothesis may arise: yet it should be observed that some dialects of the Lybian tongue differ from each other more than the Canarian does from the Shilhah; and that he would show in his description of Africa, that that the Shilhah and Canary languages were branches of one mother-tongue. He admits, therefore, that different languages are spoken in the Canaries; but he supposes them to be, as well as the Shilhah, dialects of the Lybian tongue, the Canarians and the Lybians being the same people. But as Glas does not explain what he means by the Lybian tongue, his opinion amounts to this:—that "the language in Tenerife at the time of

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* The plural of Shilhah, the name of a Berber tribe inhabiting some part of Morocco.—Ed.

† Vol. ii. p. 36.

‡ M. Macedo has given below only 21.—Ed.

§ Glas, p. 172.

the conquest, had no affinity to those used in the rest of the islands." By the annexed specimen (which he gives) it seems to have some resemblance to the Peruvian or some other of the American tongues.*

Clavijo,† on the contrary, maintains that the inhabitants of the Canaries could not have been derived from the Moors of Barbary; and that they spoke the same tongue, or, at least, dialects of one mother tongue, which by the corruptions and changes occurring in the course of ages, among people who had no communication or commerce with each other, had been transformed into different dialects. But from the reason alleged by Clavijo for the corruption of the language of the Canary Islanders, a consequence ought to be deduced, the very reverse of that which he draws from it. Languages do not change their physiognomy, are not corrupted, except by contact with other languages, and by an augmentation of the wants and commerce of the people who use them, by which they are compelled to create new terms in order to express new objects, &c. Now the Canary Islands had no communication with each other: their inhabitants had no kind of vessels to navigate their seas, as may be easily proved by the evidence of all their historians; and the Guanches did not even know how to swim: ‡ how then could a people so entirely cut off from all others, and in the lowest degree of civilization, corrupt its original language so as to form dialects of it, which would be unintelligible from island to island? That is absurd.

But instead of troubling ourselves with the opinions of writers who lived in ages long posterior to the extinction of the primitive race, let us consult ocular witnesses of the times when that race was still extant, and had not been entirely subdued by its inveterate enemies.

The earliest writers on the Canaries (after the Portuguese navigators mentioned in my 'Additamentos'§) are Pierre Boutier and Jean le Verrier, who accompanied Jean de Bethencourt to the Conquest of the Canaries, in 1402, and remained there for some years.

They say: "Encor l'an 1402, il fut prins, selon ce que l'on dit, quatre cens personnes; mais ceux qui y sont à present (in the Isle of Ferro) feussent venus s'il y eust eu quelque truchement."||

"Si a depuis trouvé manière d'avoir un truchement qui sçache

* Glas, p. 172. † Clavijo, vol. i. pp. 118, 129, 138. ‡ Ibid. p. 138.

§ Additamentos á 1ª parte da Memoria sobre as verdadeiras épocas que principiarão as nossas Navegações e Descobrimentos no Océano Atlántico, printed in the Mem. da Academia Real das Sciencias de Lisboa, vol. xi. part 2, p. 177.

|| Histoire de la première Descouverte et Conqueste des Canaries. Paris, 1630. p. 77.

le pays, et parler le langaige pour entrer en icelle isle (Palma) et és autres."*

"Et est le païs (Gomera) habité de grand peuple qui parle le plus estrange langaige de tous les aultres païs de par-de ça; et parlent des banlevres ainsi que si feussent sans langue."†

"Le langaige de ce païs (Spain) approche fort de celui du païs de Canarie."‡ That is, I suppose, that the pronunciation of the different languages of the Canaries was rather guttural; because that is the only point in which they could bear any resemblance to the Spanish.

In the spring of 1445, Ca da Mosto § visited a part of these Isles. He says: "The inhabitants of these four islands (Lanzarote, Fuerte Ventura, Gomera and Ferro) subject to Christians, are Canarians (Canarii), and differ in language, understanding each other but little."|| What Ca da Mosto here says can only apply to the inhabitants of Lanzarote and Fuerte Ventura, the only ones (as we shall see hereafter) of which the inhabitants could understand each other a little. He merely passed by these isles, visiting only Gomera, Ferro and Palma, and was on shore only on the two first, consequently he could not give any very exact or detailed account of them.

Nicols, who remained 7 years in the Canary Isles, wrote a description of them in 1526. He was factor to some English merchants, and landed there in 1519, 23 years after the Conquest of Tenerife by the Spaniards in 1496. He says: "This people (of Tenerife) was called Guanches, whose tongue was totally different from that of the Canarians; as likewise each of the isles there had its own tongue."¶

Bordono,** who published his 'Isolario' in 1528, says that the languages of the Canary Isles were different from each other.

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* Histoire de la première Descouverte et Conqueste des Canaries. Paris, 1630, p. 77.

† Ibid. p. 124. ‡ Ibid. p. 195.

§ Ramusio (tome i.) says, by mistake, that Ca da Mosto left Venice in 1454: the figures have probably been misplaced. See Colleco de Noticias para a Historia e Geographia das Naçoẽs Ultramarinas, &c. tome ii. Pref.

|| Ramusio (Ed. 1588, vol. i. p. 98) says, "Sono Canarii, e sono differenti di linguaggio, e poco s'intende l'un con l'altro." I think the words "sono Canarii" are an interpolation in the text of Ramusio. The isle called Canaria had not then been conquered; and the inhabitants of the four isles possessed by the Spaniards made incursions into it for the purpose of enslaving its inhabitants, as Ca da Mosto himself informs us. It was therefore impossible that the inhabitants of the four isles could be Canarians; the more so as the isles had no communication with each other before the Europeans arrived there. Though all the editions of Ramusio have "Canarii," I am convinced it should be "Cristiani."

¶ Hakluyt, Voyages, vol. ii. part 2, p. 230.

** Isolario nel quale si ragione di tutte le Isole del Mondo con li loro nomi antichi e moderni, &c. Venezia, 1528. Haym, Biblioteca Italiana, Milano, 1803, vol. iv. p. 103; and Vinegia, 1534, folio 16, verso.

Gomara,* a writer of the first half of the sixteenth century, says that each of the isles had its particular language; and that for that reason they could not understand each other.

Abreu Galindo, quoted by Glas,† says that all the languages of the Canaries (that of Tenerife excepted), though very different, had some affinity with each other.

Nuñez de la Peña ‡ says the inhabitants of each of the isles had a different language; and that God was called by a different name in each island, according to the language of each. The languages of Lanzarote and Fuerte Ventura,§ he remarks, were different, though they resembled each other very much, particularly in their pronunciation; and that the languages of Canaria, Gomera and Ferro differed from each other.||

Let us now consider some historic facts which corroborate all that the earlier writers have said on this subject. Besides what has been said above respecting Lanzarote and Fuerte Ventura, which proves that they could not understand the people of Ferro, Palma and the other isles, without an interpreter, the following facts may also be mentioned:—

Diego de Herrera in 1461, setting out from Lanzarote to conquer Canaria, took with him some persons who understood and spoke the language of that island.¶ When he went to Tenerife to take possession of it in 1464, he took with him two interpreters of the Guanche language. Canaria was the isle from whence he set out, and he was accompanied by several Canarians; but if the Guanche language ** had been the same as that of Canaria, he would not have wanted interpreters.††

In 1493, when Don Alonzo Fernandez de Lugo went from Canaria to conquer the Isle of Palma, he sent to the king of that isle an ambassador who understood its language.‡‡ The language of Palma therefore differed from that of Canaria, or Don Alonzo would not have wanted an interpreter. In the same year he made an incursion in Tenerife; and though he had several Canarians with him, he sent some persons §§ who understood the language of the country, to inquire what were the intentions of a body of Guanches who appeared in face of the Spanish army.

I seem, therefore, to have demonstrated that the inhabitants of each of the Canary Isles spoke a different language, which could hardly fail to be the case, as all the earliest historians of these isles agree in affirming that they differed very greatly, not only in their

* Historia General de las Indias, &c. Anversa, 1554, fol. 299. Gomara is erroneously called Gomora by Don Nicolás Antonio, Biblioth. Nova Hispana, vol. i. p. 437.
† Ibid. p. 173. ‡ Ibid. pp. 21, 22. § Ibid. pp. 20, 21. || Ibid. p. 17.
¶ Abreu Galindo, quoted by Glas, p. 40.
** Nuñez de la Peña, pp. 69, 71. Clavijo, vol. i. p. 452.
†† Were not these interpreters Canarians?—ED.
‡‡ Nuñez de la Peña, p. 110. §§ Id, p. 116-119.

customs, manners, and religion, but even in their physical conformation, which proves that they sprung from different stocks. But what were the languages spoken in the Canary Isles? This is a problem, for the solution of which we have only very insufficient data in the wrecks of those languages which have come down to our times.

Dr. Pritchard (vol. ii. p. 36) has given the following vocabulary of the Canarian languages, in order to prove their resemblance to the Berber or Shulúḥ, upon which I hope I may be allowed to make some remarks:—

English.	Berber or Shulúḥ.	Guanche.*
1. Water	Anam, Amen	Aenum, Ahemon.
2. Heaven	Tigot, plur. Tigotan	Tigot, plur. Titogan
3. God	M'Kurn	Acoran.
4. Priest	Saquair	Faycayg.
5. Temple	Talmogaren	Almogaren.
6. Houses	Tigamin	Tamogitin.
7. Place of punishment	Tagarer	Tagarer.
8. Captain	Kabira	Kabcheira.
9. Mountain	Aya, Dyrma, Athraar	Aya, Dyrma, Thenar.
10. Deep valley	Douwaman	Adeyhaman.
11. Barley	Tezezreat, Tomzeen	Tezzezes, Temasen.
12. Wheat	(Triticum of the Romans)	Trissa in Lanzarote Trichen in Tenerife
13. Palm-tree	Taginast	Taginaste.
14. A rush-basket	Carian	Carianas.
15. Green figs	Akermuse	Archormase.
16. Powdered barley	Ahoren	Ahoren.
17. Flour of barley in oil	Azamittan	Azomotan.
18. Goat	Ara	Ara.
19. Sheep	Thikhsi, Ana	Tihaxan, Ana.
20. Pig	Tamouren	Tamacen.
21. Milk	Acho	Ano, Achemen in Gomera.

1. Ahemon, according to Glas;† Aemon, according to Clavijo,‡ signified "water" in the language of the isle of Ferro. Aenum is taken from Adelung,§ who sets down this word as belonging to Lanzarote; but I do not find it in any of the vocabularies given by the writers who have spoken of the languages used in the Canary Islands. Perhaps Adelung copied Aenum from Bory de St. Vincent, whom he quotes (p. 59), instead of Aemon.

2. Tigo or Tigot, plural Tigotan (not Titogan), is a word of the Palma language.

* It must be borne in mind, that, by Guanches, Dr. Pritchard means the inhabitants of all the Canary Isles.

† Pp. 174-180. ‡ Ibid., p. 131-133.

§ Mithridates, III., i. p. 60.

3. Alcorac, in Clavijo, a Canarian word.

4. Faycag, in Glas; Faycan, in Clavijo, a Canarian word, which signifies "a high priest."*

5. Almogaron, in Clavijo, a Canarian word.

6. Tamoganteen, in Glas, a Canarian word.

7. Tagaror (Glas), Tagóror (Clavijo), a Tenerife word, signified properly the "supreme council of state," where important affairs were determined upon, and criminals were tried and punished.†

8. Quebehiera (Glas), Quevehi (Clavijo), a Tenerife word, which was the title given to kings, equivalent to "your highness," "your majesty." The word for "captain" was Sigonye.‡ Kabeheira is probably taken from Vater's Supplement to Adelung, where Glas's spelling has been altered.§

9. Thener, according to Glas, signified "mountain" in the language of Palma; but the Spanish writers, Vianna, Abreu Galindo,‖ and Nuñez de la Peña,¶ say that Tener signified "snow," or "white;" and that Ife was the word signifying "mountain." I do not know that the words "aya" and "dyrma" signify "mountain" in any of the Canarian languages. Umiaya** is the name of the district of Telde in the Isle of Canaria; and Tirma†† is the name of another mountain in the district of Galdur in the same island. Doramas‡‡ is a mountain 4 leagues distant from the city de las Palmas; also in Great Canary. They are the names of particular mountains, not words signifying "mountain."

10. Adeyhamen (Glas), Adexamen or Adeyahamen§§ (Clavijo), is a word of the language of Palmas. The interpretation, "a deep valley," seems to be taken from the 'Hohles Thal' of Vater,‖‖ who has this word in his short vocabulary of the language of Lanzarote and Fuerte Ventura. Clavijo¶¶ gives to Adexamen the sense of "submerged;" and in his description of the Isle of Palma says there is a district named Adeyahamen, *i.e.*, "under water," because the springs which run to the mills of the willows (*molinos de los sauces*) burst forth there. Glas*** also says, "Adeyhamen, 'under the water:' so they termed a district overlooked by eminences, in which were the water-springs."

11. Terezes (Clavijo). This word, belonging to Lanzarote and Fuerta Ventura, does not signify "barley," but according to Clavijo, "staves of (azebuche) wild olive." Glas,††† without determining the kind of wood, says, "sticks used by the natives as

* Clavijo, vol. i. pp. 154, 170.

† Nuñez de la Peña, pp. 40, 41, 120; Clavijo, vol. i. pp. 184, 187, 218, 219, 452; vol. ii. pp. 202, 205, &c.

‡ Clavijo, vol. i. p. 132.

§ Mithridates, vol. iv. p. 428.

‖ Clavijo, vol. i. p. 68.

¶ Ibid. p. 18.

** Clavijo, vol. i. p. 170.

†† Ibid. vol. i. pp. 170, 204.

‡‡ Ibid. p. 207.

§§ Ibid. p. 198.

‖‖ Mithridates, vol. iv. pp. 429-

¶¶ Vol. i. p. 198.

*** P. 177.

††† P. 174.

weapons." Tamosen (Clavijo) is the word for "barley" in the language of Lanzarote and Fuerte Ventura.

12. I know of neither Trissa nor Trichen in any of the Canary languages. Perhaps M. Ritter took this word from Adelung,* and wrote Trissa for Triffa. Adelung gives Triffa with the sense of "wheat" in his list of the words peculiar to Lanzarote, which he took from M. Bory de St. Vincent; † but, notwithstanding the authority of that writer, I greatly doubt the existence of the word Triffa: first, because of all the Spanish authors who have written on the Canary Isles, there is scarcely one who speaks of the cultivation of wheat in those isles, and that only in Tenerife, where the cultivation of wheat is moreover contested; ‡ and, secondly, because most assuredly there was no wheat in Lanzarote when Jean de Bethencourt arrived there in 1402, for he found nothing but barley.§

Triguen (Glas), Yrichen (Clavijo). According to Abreu Galindo ‖ the word for wheat was Yrichen. Glas, who writes Triguen, had probably an incorrect MSS. of Galindo's work.

13. Taginarte, a Gomera word, does not signify a palm-tree, according to Glas, but another kind of tree.

14. Carianas (Glas and Clavijo), a Canary word.

15. Arahormaze (Clavijo), a Canary word.

16. Ahorer (Glas), Ahoren (Clavijo), a Tenerife word.

17. Asamotan (Glas), Aramotanoque (Clavijo), a Canary word, signifying "barley," according to Clavijo. Tamazanona is the Canarian term for "meat fried in oil," according to Glas,¶ who says that Abreu Galindo has inadvertently put the one for the other, "asamotan," "meat fried in butter," for "tamazanona," "barley," as in the languages of Lanzarote and Fuerte Ventura; but Clavijo gives to tamaranona (which is the same word as Glas's tamazanona) the sense of "fried meat."

18. Hara, "a sheep," according to Clavijo, who says that "goat" was axá. Glas has "ana" for sheep, perhaps from an error in his MS.

19. Taxacan (Clavijo), a Canary word.

20. Taguacen (Glas), taquazen (Clavijo), a Canary word.

21. Aho (Glas), a word of Lanzarote, Fuerte Ventura, and Canaria; of the two first (Clavijo); Achemen (Glas and Clavijo), a Ferro word.

These observations, I think, will show what reliance can be placed on the relationship between the Canarian and Berber, or Shulúh, languages; the more so, as the words given in M. Ritter's

* Mithrid., vol. iii. part i. p. 60.

† Essais sur les Iles Fortunées, pp. 49-52.

‡ Clavijo, vol. i. p. 134.

§ Histoire de la première Descouverte, &c., p. 133.

‖ Clavijo, vol. i. p. 134.

¶ Glas, p. 176.

vocabulary belong to the languages of different islands, which would prove the identity of all the Canarian languages, if the same objects had not been represented by different words* in each of them, as the subjoined list will prove to have been the case:—

English.	Lanzarote and Fuerte Ventura.	Canaria.	Gomera.	Ferro.	Palma.	Teneriffe.
Butter	..	..	..	aculan	..	oche
Sheep	..	tahaxan†	..	..	..	hara
Goat	..	aidaman	..	..	teguerite	axá
Dog	..	..	..	..	haguayan	cancha
Sky	..	..	..	..	tigotan	ataman
Pig	..	taquazen	..	..	atinaviva	..
God	..	alcorac	..	*m.* craoranhan *f.* moreyba	abora	achaman
Milk	aho	..	..	achemen	..	ahof
Barley	tamosen	aramotanoque	..	..	..	tano
King	..	guanarteme	..	..	..	mencey
Shoes	maxo	..	..	..	..	xercos
Place of worship	efequenes	almogaron	..	..	..	..
	&c.	&c.				

between some one of the languages spoken in the Canaries and the Berber or Shulúh; I only say that we have not sufficient data to affirm it, especially as the sounds of the Canarian words, when spelt by Spaniards and other Europeans, may have been so inadequately represented as not to justify any such inference.‡

The following table of the numerals from one to ten, in the language of the isle of Canaria, will suffice to prove that it, at least, was not the same as the language called Berber, or Shilhah (Shulúh), by Dr. Pritchard:—

	Canaria.§	Berber.‖	Shilhah.‖
1.	Nait	Ouan (wán)	Yean (yén or yán).
2.	Smetti	Thenat (senat)	Seen (sín).
3.	Amelotti	Kerad (kerád)	Crat (kerád).
4.	Acodetti	Gour (kúz)	Koost (kúst).

* Have not the Spanish and Italian languages, the affinity of which is indisputable, many different words to express the same idea?—ED.

† Clavijo, vol. i. p. 167.

‡ The author here cites a long passage from a controversial tract of M. Senkovsky (Lettre de Tutundji Oglou, p. 60), in which that lively, but superficial writer proves nothing but his boldness of assertion and total ignorance of those able works the 'Asia Polyglotta' and the 'Atlas Ethnographique,' which he attempts to refute by groundless sarcasms. As this quotation would only mislead the unwary, it has been here omitted.—ED.

§ See my Additamentos, &c., Mem. da Acad. Real. de Sciencias, vol. xi. pt. iii. p. 184.

‖ Pritchard, vol. ii. p. 39.

Canaria.	Berber.	Shilhah.
5. Simusetti	Summus (summus)	Summost (summust).
6. Scsetti	Sedis	Suth-east (sadhést).
7. Sattí	Set	Sad.
8. Tamatti	Ten	Tempt (temt).
9. Aldamorane	Dza (tis'ah)	Tzau (tis'ah).
10. Marava	Meraoua (meráwa)	Marrow (maráú).

Among these numerals of the Canarian language, there are some that resemble the Berber and the Shulúh; but there are others, also, which are entirely different, and that is sufficient to show the disagreement of those languages. If the identity of two languages could be proved by a resemblance between some of their numerals, the Portuguese and the German might be shown to be the same.

All that can be inferred from what is said on the subject of the Canarian languages by the Sicilian, Lucio Marineo,* who arrived in Spain in 1486, and was consequently a contemporary of the aborigines, is, that their languages bore no resemblance to any other then known.

The proper names of men used in Tenerife, Benecharo or Beneharo, Bencomo or Benicod, also called Icod, &c., seem to prove that the language of Tenerife was not the ancient Berber, because in that tongue the word used to denote "tribe" or "filiation," was anciently mas, *i.e.* "son," used as the word benú (sons of) by Arabs to signify "a tribe." †

But this phrase, "Berber language," appears not to be very clear. Berber, by which the primitive inhabitants of a great part of Africa have been designated, is too vague a term. It embraces a vast extent of country, which extends from the ocean and the Mediterranean far into the interior of Africa, even as far as Ten-boktú.‡ This country is occupied by nations differing greatly in their habits, customs, colour, physical conformation and moral qualities. It appears to me impossible that all these nations can speak the same language. Dr. Pritchard § considers the Berber and Shilhah as identical; but he gives us a list of words from the Berber, Shilhah (Shulúh), Showiah, Tawárik and Síwah, which he calls Berber dialects, in which one sees by the side of words which have a resemblance others entirely dissimilar, to express the same objects. || I think that some con-

* Tiraboschi, Storia della Letteratura Italiana, vol. vii. p. 1008. Lingua utebantur barbara sibique solis intelligibili. Lucii Marinei Siculi Opus de rebus Hispaniæ memorabilibus. Compluti, 1533, p. 106.

† Observations sur les Numides, par M. Étienne Quatremère; Bulletin de la Société de Géographie, vol. x., N.S., p. 239.

‡ Hodgson, in 'Transactions of the Philadelphia Philosophical Society,' vol. iv. p. 26; Gråberg de Hemsö, Specchio di Marocco, pp. 69, 295; Pritchard, vol. ii. p. 15.

§ Pritchard, vol. ii. pp. 19, 36, 365.

|| Ibid., vol. ii. p. 41.

fusion prevails respecting this subject, and that, for want of accurate notions, the vague term Berber has been applied by the writers on it, to the languages which they had occasion to notice, instead of the particular name by which those languages are properly called.

The different Berber nations have, in fact, particular names to designate their languages. Thus those who inhabit the Regency of Algiers, Constantina, &c. (who are the ancient Numidians), call themselves Sháwís, and their idiom Sháwíyah.* The inhabitants of the southern part of Morocco speak the Tamzirgt, Amazich, or Amazigh.† The Tawárik call their language Tergiah, Tergeah, or Ertana.‡ The language of the inhabitants of Wadreagis, the Eregaiah.§ That of the inhabitants of the Oasis (the Ammonians), Síwah, &c.|| So that it seems there is no one language which can properly be called Berber, to which all the other languages spoken by the nations named Berbers can be referred as a type, in the same manner as the Portuguese, Spanish, Catalan, French, and Italian, though having many points of mutual resemblance, cannot be referred to any one language actually spoken, which is, so to speak, their common source.

So that when Dr. Pritchard and M. Gråberg de Hemsö say, the former that the Berber and Shulúh are identical, and the latter¶ that Berbers and Shulúhs cannot converse without an interpreter, they may both perhaps be right; but, as they do not explain what people they call Berbers, or to the idiom of what African tribes they apply that term, we are not in a condition to judge of the accuracy of their comparison. The latter writer** appears to compare the inhabitants of Er-ríf with the Shulúh; and according to the testimony of our Arabic professors, Messrs. Moura, Rebello and Castro, who passed some years at Tangiers, in order to learn that language, the mountaineers of Er-ríf speak a language totally different from that of the Xolohh (Shulúh). But this question must be decided by men of learning, who have information on these points which I do not possess.

As many proper names of men common in Tenerife began by Ben, one might be tempted to suppose that the natives of that isle spoke Arabic; but the Spanish writers expressly say that the language of Tenerife was very difficult, different from all the other Canarian languages, and strongly aspirated. Now the Spaniards of those days were perfectly well acquainted with Arabic, from their continual intercourse with the Moors who then lived among them; and, consequently, if the language of

* Bulletin de la Soc. de Géographie, vol. x., N. S., pp. 20, 236; Pritchard, vol. ii. p. 20; Gråberg, p. 73.
† Gråberg, p. 73; Pritchard, vol. ii. p. 19.
‡ Hodgson, p. 29; Pritchard, vol. ii. p. 21.
§ Hodgson, p. 23.
|| Hodgson, pp. 32, 36; Pritchard, vol. ii. p. 14.
¶ P. 77.
** P. 69.

the Guanches had been Arabic, the Spaniards would not have failed to notice it.

The Semitic languages were very widely extended, as M. d'Abbadie* affirms that the Amharnya, Ilmorma, Somáliad, Shaheï, Táltal, and the languages of some other provinces in Abyssinia, all belong to the Semitic family; so that it is possible that the Isle of Tenerife was peopled by a race which spoke one of the Semitic tongues.

[Had the learned and candid writer of the above remarks read with attention the account of the Berbers and their language given by Adelung, in his 'Mithridates,' he would have found most of his doubts removed, and his questions answered. He would have learnt that all the various tribes named by him are called Berbers by the Arabs, and spoken of as the same race; that they inhabit the mountains and deserts of northern Africa from the Atlantic to the Egyptian Oases, and from the Mediterranean to the banks of the Senegal and Jálibá (Niger); and had he seen M. St. Martin's learned papers on the Numidians, in the 'Memoirs of the French Academy of Inscriptions,' he would have been aware that Amazígh, or Mazígh—the only common name by which these Berbers call themselves—is identical with the Mazices of the Greeks and Romans: he would have also perceived that, by confounding *identity* with *affinity*, he has been drawn into a train of inconclusive arguments. The different names which he gives are, 1. Sháwiyah, the language of the Sháwí tribe; 2. Tamzirgt,† is properly Tamazíght, the Amazígh (language), t-amazígh-t being the feminine of amazígh; 3. Tergea, properly Ṭerḳíyah, the tongue of the Ṭawáriḳ, or Ṭerḳí tribe, called Retánah‡—*i. e.* jargon, by the Arabs, as we learn from Ibn Khaldún; 4. Eregaiah, properly Er-reïḳíyah, is the language of the tribe inhabiting Wád-er-reïḳ;§ 5. Síwí, the tongue used in Síwah, the Oasis of Ammon; 6. Shulúḥ, is the plural of Shilḥah, a Maroquine tribe of Berbers. A comparison of the vocabularies of these different tribes shows, beyond a possibility of doubt, that their dialects are fundamentally the same, and approach at least as nearly as Spanish and Portuguese. The ancient and modern names of places also, as well as the Canarian vocabularies, point to one peculiarity by which the Berber language is distinguished from all others—the formation of the feminine gender.—Ed.]

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* Journal Asiatique, IIIme. Série, vii. pp. 364-367.

† *rg* is used by some writers for the Arab *gh*.

‡ Vulgarly, by transposition, Ertánah.

§ Shaw's Wadreag should probably be thus spelt: if so, it signifies "the Vale of the Mirage."

XIV.—*On Benin and the Upper Course of the River Quorra, or Niger.* By Captain Becroft. Communicated by Robert Jamieson, Esq., of Liverpool.

Experience appears now to have set the stamp of her authority on the position, that if an intercourse with the interior of Central Africa of any extent or practical utility is ever to be established by the navigation of the Quorra,* or Niger, by Europeans, some new channel of approach to the main body of that river must be found by which the pestiferous swamps of its Delta will be avoided. This, for a considerable time, has been the impression on many who have turned their attention to African geography; and the Benin, or Fermoso river, from its magnitude, its relative position, and proximity to the Niger, had been supposed likely to furnish such an approach.

Participating in this impression, Mr. Jamieson, in 1839 (not being aware that a Government-expedition was in contemplation), built and dispatched a steamer, of suitable dimensions and power, to ascertain this important point, and at the same time to endeavour to establish a commercial intercourse with the interior.

In April, 1840, Mr. Becroft in command of this steamer, the "Ethiope," ascended the Fermoso, his ship's company consisting of fifteen Europeans, including officers, medical men, an engineer, and seamen, with a full complement of blacks, or Kroo-men, besides interpreters—one of whom was Mina, who had accompanied Captain Clapperton and Lander.

For about 40 miles from the sea, including windings, he found the Fermoso a fine bold river, with from 6 to 3 fathoms water. At this point, a bifurcation took place—both branches proving to be highly tortuous, and much narrower than the main t[illegible] speak river, but having a depth of not less than 3 fathoms, so that the steamer was able to ascend them. This Mr. Becroft computed to be from 40 to 50 miles on the one, and from 60 to 70 miles on the other, including windings. His further progress was obstructed at these respective points, not from want of water—for that continued as deep as before—but from the impenetrable forests of large aquatic plants, which choked up the streams in both branches, so as to render a further passage impracticable except by cutting *a way* through them, which could only have been accomplished by considerable labour and with great loss of time. This he did not feel justified in risking, more especially as the extreme limpidness of the water of both streams, when compared with that of the Niger, which Mr. Becroft had navi-

* Kwárá of the negroes, probably the Jálibá or Gyálibá of Mungo Park; the only arm of which yet found navigable to the sea was called Nún by the Portuguese navigators; it is a little to the E. of Cape Nún.—Ed.

gated some years before, gave a sufficient proof that the Fermoso is an entirely separate river—taking its rise probably in the highlands N.W. of the Niger. He therefore returned with the steamer to the anchorage at the mouth of the river, which he had left eleven days before.

His sketch of this river, as reduced by Mr. Arrowsmith, is here given. Both of its branches are described as being beautifully wooded; and at the highest point attained in the southernmost arm, extensive plains open to the view, upon which, however, neither inhabitants nor symptoms of population of any sort could then be discerned. The Sooba Country is the name given to this district by the natives lower down the river, who represent it as forming part of the kingdom of Benin.

Foiled in the accomplishment of this their main object, Mr. Becroft and his party resolved to try whether a good entrance to the Niger might be found by what is called the Warree* branch of that river. This branch they entered by passing through a creek of some magnitude (called "Young Town Creek"), which flows out of the Fermoso to the southward at some distance from its mouth; and they succeeded in reaching the Niger at the point of bifurcation with its Nún branch a short way below the town of Eboe.† In their progress thither they passed three openings or passages to the sea, which they presumed to be the rivers Escravos, Forçados, and Ramos,‡ as laid down in the charts of the coast. The difficulty of navigating their way through this new and intricate passage (which is laid down in their map) made it the work of a fortnight, during which time sickness unhappily appeared among the European portion of the steamer's crew, and continued more or less among them during the whole of the time she remained in the Niger, eventually terminating fatally in the cases of the first officer, Mr. Harrowar, two seamen and two boys.

Proceeding up the Niger, they arrived off the town of Eboe on the 20th of May. From thence they proceeded upwards on the 26th of that month; but, in consequence of having entered the river, as they found, before its periodical rise had fully commenced, the rains of that season also proving unusually light, they were unable, from want of water, to reach the town of Rabbah till the 25th of August. Notwithstanding every precaution in sounding, &c., as they ascended, the steamer, though not drawing more than from 5½ to 6 feet, was constantly taking the ground, and frequently could not be got off again without much labour and loss of time, more particularly as the European part of the crew continued incapable of any duty or exertion. As the river

* Wári, Owárí, or Awerri, near the point where the Rio dos Escravos (Slave River) and Rio dos Forçados (Galley-Slave River), or Awerri River, separate.—Ed.

† I'bo or I'bu.—Ed.

‡ Rio dos Ramos (Bough River).—Ed.

from Eboe to Rabbah had been previously explored, it is needless here to name the various towns and villages they called at in that portion of it.

September 7th.—They sailed from Rabbah,* in the hope of penetrating as high as Bossa† while yet the river was rising. At first they found the river divided into two channels by a long low island, and then running along the base of a range of mountains called Kissey.‡ Its width is about ½ a mile; the current from 2½ to 3 knots; depth from 8 feet to 3 fathoms. They anchored for the night in 3 fathoms.

8th.—They passed through a narrow channel, rocky on each bank, and at noon came to anchor abreast of a high and extraordinary-looking rock in the bed of the river (called Kissey‡ Rock), with other smaller detached rocks a-head resembling the piers of a bridge, separating the river into several channels with a strong downward current; the scenery all around being very beautiful. After taking soundings, they ascended through the channel formed by the two smallest of these rocks, near the eastern bank—its width being not more than 15 yards, with soundings of 11 feet—and soon afterwards, having passed the town and island of Midjee,§ anchored for the night.

9th.—About 8 A.M. they passed the town of Kalimah, and, further on, the village of Agoghie (abreast of which is a ledge of rocks)—the old village of that name being on the opposite or western bank, with a plantation of bananas, plantains, and yams. The soundings here gave 2 fathoms; there are a good many sunken rocks (as shown by the eddies), and others show themselves just above water. Towards evening, having passed the village of Buckoe and a small rocky island in the centre of the river, they cast anchor for the night in 2 fathoms, off an island at a short distance from Lechee.

10th.—They again cast anchor for the day off Lechee, in 2 fathoms. The river is here certainly not more than ½ a mile wide. This town looks poor and miserable, being apparently much oppressed by the Felátahs: its whole population cannot exceed 300. The chief, who was very eager for rum, brought out a decanter (such as are called on the coast *trade-decanters*) containing some ardent spirits, likewise a wine-glass—all of which he said he had purchased at the town of Raka, in the Yárriba country—from which it would appear that there is a communication between Raka and the coast, probably with Whydah|| or Lagos.

11th.—They weighed anchor and proceeded, passing the village

* In this abridged narrative the necessarily monotonous details of running into shoal water, coming to anchor, going out to sound, returning, weighing and proceeding, &c. have been omitted.

† Busá.—ED. ‡ Kissi.—ED. § Mijí.—ED. || Widá, or Fidá.—ED.

of Buzzanghie, then the island and village of Tykboo. At this part of the river its banks are very rocky, and its bed is contracted to about 300 yards, with soundings from 5 to 6 fathoms. Having afterwards passed New Bajibo, and the old town of that name on the opposite bank, they came to a part of the river where, from the position of the rocks, the channel is not more than 50 yards wide. The current was here found to be so strong that the steamer could only just go a-head, and was very ticklish to steer. There was no safe anchorage, the bottom being foul and rocky; and two leads, with a part of the lines, were lost in sounding. By perseverance, however, they succeeded in getting through this passage; but shortly afterwards came to another somewhat similar, where the channel is not more than 30 *yards* wide, with an increased velocity of current. The full power of the engine was now only able to keep the steamer in a secure position; and had the current caught her on either bow, she must inevitably have gone upon the rocks, as there was not room for her to recover herself.

It being now obvious that further progress upwards by a vessel of the Ethiope's power (thirty horses) was impracticable; and seeing that to have attempted to come to an anchor in such foul and rocky ground, with such a current, would in all probability have caused the loss of the anchor, there was no alternative but to yield to circumstances, and give up all attempt at proceeding farther. This was accordingly, though reluctantly, done; and they dropped the steamer down to Bajibo, where she was anchored in four fathoms. The people from this town came alongside in canoes, and were allowed to indulge their curiosity to see the "white man" and his "fire-ship," by coming on board in small parties at a time. They also brought yams and firewood for sale; but, with the exception of a little ivory, had no produce to barter for merchandise. The old town, on the western bank of the river, from the appearance of its ruins, must have been a place of some importance. It had been destroyed by the people of Yárriba; for what reason could not be ascertained, but it was intimated that it was to avoid their future attacks that the new town had been placed on the opposite or eastern bank.

Mr. Becroft is of opinion that from the point above mentioned, at which his progress up the river was stopped, he could have reached Lever in two hours, but that the ascent thence to Boossa and Yaooree* could not have been accomplished under a month, and in that time only by taking advantage of the eddies, such was the increasing force of the current, from the daily rising of the river.

Returning to Rabbah, they remained at that town till the 20th of September. On the morning of that day, having fired a salute in honour of the king and his people who had come to the beach

* Yáurí or Yáwurí.—ED.

in great numbers to witness their departure: "At 9 A.M.," says Mr. Becroft, "the king made his appearance on the bank of the river. I went on shore to wait on him. On my landing he dismounted. Mats having been spread, he seated himself, and desired me to sit down by him. He wished Ramadán, the Arab, to sit down also; but he modestly declined. After the usual compliments and salutations were over, I thanked him for the ostrich he had sent to me the day before, and explained the accident by which it had been injured (it had got one of its legs broken while sent on board); he said that when I returned he would give me another. He then presented me with deer-skins and a tanned hide, blackened on one side, and neatly bound with coloured leather; likewise a metal jug full of Gooroo nuts. I asked if he would accept of my sword if I sent it on shore to him. He said he would, and would be proud to wear it. I told him that I would send it with the flag which I had promised to him, as soon as I went on board. He thanked me—desired me to remember him to the Queen of England, and hoped she would think him worthy of her notice. Here the ceremony ended. I wished him and his people health and happiness, and thanking him for his kindness and attention, stepped into the boat, the trumpets sounding. Sullikan Yiki, King of War, was present with a numerous mounted retinue."

"I accordingly sent, by the return of the boat, my sword and belt, with an union-jack; weighed anchor at 10 A.M., and steamed about a mile up the river. I then turned the steamer's head down the river, and fired a salute of five guns in passing, which was responded to by loud shouts and the sounding of trumpets, and we were soon out of sight of Rabbah."

They proceeded towards the coast, which they reached by the Warree and the Fermoso rivers on the 30th of October, having called at all the principal places on the river for trade, as they had done in ascending.

Throughout this six months' sojourn on the Niger, Mr. Becroft and his party experienced nothing but friendship from kings, chiefs and people. At Rabbah, which is the largest town on the river, they were particularly well received and entertained, having had frequent interviews with the king. This personage, on Mr. Becroft's taking his final leave, presented him, as mentioned above, with a metal jug, *apparently* of European manufacture, filled with Gooroo nuts,* in token of friendship; and signified his wish, that, besides a number of brass cannon to protect his town, Mr. Becroft would bring for him on his next visit to Rabbah *two sofa-beds and a large trunk!*

* Guru, gulu, gura, gora, or kola, is the Negro name of the bean of the Sterculia acuminata well figured and described by M. Palissot de Beauvois, in his Flore d'Oware

Mr. Becroft and his party describe the country in the interior beyond the swamps of the Delta—that is, above the town of Iddah, some 200 miles from the coast, as being beautiful, the soil fertile, the climate agreeable,* and the natives peaceable and desirous of commerce, though as yet possessing few articles of produce to give in exchange for European commodities. Cotton and indigo, however, are indigenous productions—the former is spun and manufactured at various towns in the interior, and the latter, well prepared and of good quality,† was found for sale in the market-place of Rabbah, though only in a very small quantity. There can be no doubt, however, that these and other tropical productions would be cultivated extensively by the natives, were there a steady demand for the produce when raised and prepared. This demand commercial intercourse with Europe alone can supply, and yet the pestilential swamps of the river's delta unhappily deny to Europeans the prosecution of such intercourse. It remains then that commerce on the Niger can only be followed by means of steam-vessels manned entirely by native Africans, under the direction of European officers and engineers well inured to the climate. But even in this mode of prosecuting the desired intercourse, there appears too formidable an array of difficulties to render it likely to become of any considerable practical benefit to Africa or Europe—first, in the danger of navigating to and from Africa, vessels constructed so as to be of sufficiently light draught of water for the ascent of the rivers, and consequently badly adapted to the open sea—next, in the great expense attendant on the employment of steam-vessels in so distant a quarter and in such a climate—then in the impossibility of having them repaired in case of accident to the engineers, or of any *serious* injury to the machinery; and finally, in the fact, now well ascertained, that the river itself is not navigable except during the few months of the year when it is flooded.

Mr. Becroft was instructed to remain in Africa with his steamer after the end of 1841, with a view to ascending and trading on the Old Calabar and Cross rivers at the time of their periodical rise. He did so, but unforeseen and untoward circumstances, occurring on the coast, delayed his prosecution of this purpose till late in the season, and just when he was on the point of commencing it, his aid was required by H.M. steamer "Albert," in distress up the Niger. He however succeeded, after bringing that vessel to Fernando Po, in ascending the Old Calabar river above Duke's Town and the villages called Guinea Company, but found that it is a river quite unimportant, beyond the influence of the tide. As

et de Bénin p. 41, Tab. xxiv. It is as much valued in Negroland as betel-nut in Hindústán.—ED.

* The usual range of the thermometer in the cabin of the steamer while in the river was—at 6 A.M., 72° to 76°—at noon, 82° to 86°—at 6 P.M., 80° to 82°.

† Specimens of this indigo were sent with the Paper.

the water of Cross river was now falling, and as it would have been imprudent to have attempted to ascend it in the steamer, Mr. Becroft engaged from one of the kings at Duke's Town "a pretty comfortable travelling canoe," with fifty pull-away-boys or paddlers. In this vessel, accompanied by his surgeon and two leadsmen from the steamer, he ascended that river to a town of considerable population called Ommann, passing on his way the village of Acrock, and another farther up called Etone. His sketch and soundings so far have not yet come to hand. "The course made," he states, "was about N.W. by N., the distance being about 70 miles," having "fine long reaches all the way to Ommann, with several beautiful islands. The river is shallow a little above the entrance, but this is within the influence of the tide; it is shallow at some other places, but," he adds, "we might not have been in the channel"—"the water had sunk several feet." From what information Mr. Becroft could obtain, he thinks this river must be of consequence higher up.

The town of Ommann is situate on an island, and supplies the people of Old Calabar largely with palm-oil and live stock. Mr. Becroft and his surgeon were received at this town with great friendship, as the first white men who had visited them for trade, and on taking leave they were requested to come back soon. The people of the village of Etone objected to their landing, from a belief (as was represented) that the surgeon carried with him the small-pox!

Account of a Visit to the Capital of Benin, in the Delta of the Kwárá or Niger, in the Year 1838.

In May, 1838, Mr. Moffat and the late Mr. Smith, surgeons of Mr. Jamieson's schooner the "Warree," then lying in the Benin* or Fermoso river, paid a visit to the city of Benin, chiefly with a view of opening a trade with the village of Gatto or Agatto,† under the sovereignty of the King of Benin. They were paddled by Kroo-men in the schooner's galley from 15 to 20 miles up the Fermoso to Gatto creek, on the north side of the river; and, entering this creek, they proceeded upon it about the same distance, when they arrived at the village. It was necessary to remain here for the night, and they availed themselves of this opportunity of visiting the grave of the traveller Belzoni, which they found marked by a wooden tablet fast going to decay. The next day they were carried in their cots to the city of Benin, distant from Gatto about 20 miles, in a north-easterly direction, the country on their route being finely wooded, and in some places very beautiful.

They were not long in the city before they had painful proofs

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* Benín, Benî, or Biní.—Ed. † Gató, Agató, or Agatón.—Ed.

of the barbarous state of its inhabitants. At an open space near the market-place, they were shocked by the sight of what may be termed a "Golgotha," a place where human skulls were heaped up and bleaching in the sun. Still more were they disgusted by seeing in the outskirts of the town, not far from the king's place of residence, the bodies of men who had been but recently beheaded, with turkey-buzzards feeding on them, and on the roof of a hut close by two corpses in a sitting posture. The stench from an open pit near this "revolting spot" was almost insufferable, proceeding, as they believed, from human bodies in a state of putrefaction.

It was with considerable difficulty, and not till after the expiration of four days—during which they were often asked, "What are you come for?" and when they answered "For trade," "What goods and presents then do you bring?" was immediately added—that they obtained an interview with the king. Before being admitted to his presence, they were obliged to comply with the custom of washing their hands and feet, and partaking of a nut,* which here, as in other parts of this quarter of Africa, is always presented to strangers.

The king, who is a robust old man, affected much dignity, and would not allow them to approach near his person. His demands for permission to open trade at Gatto were at first extremely unreasonable, but he at last agreed to moderate terms, and desired to see both of the gentlemen again before their departure from the city. Next in rank to the king is a person styled the "Captain of War," who resides at the entrance of the city, and by whom Messrs. Smith and Moffat had been kindly received on entering it. Next to this personage ranks a class of men called "Grandes" or "Homograndes,"† and next to these, a class called "Phœdoes,"‡ (or traders,) and then come two other classes of inferior rank. It was necessary to spend a whole day in going the round among the "Phœdoes;" and, this having been done, Mr. Moffat (Mr. Smith having been taken ill) again waited on the king, to take leave previous to their departure for Gatto. The king put several questions to him about the slave-trade, and asked when the King of England was going to settle "that palaver" (*i. e.* to allow slave-trading); and when told that "that palaver" would never be settled, he burst into a rage, and said the King of England was a bad man to steal vessels on the sea, (alluding to the capture of slavers,) and that he would send a letter to him on the subject, as one of his people could write English. The person alluded to is a native of Benin, absent at that time, who had been

* The Guru nut, doubtless: this was meant as a compliment.—Ed.

† From the Portuguese "Homems Grandes," great men.

‡ Probably from the Portuguese "Fiador," (surety,) or broker. *Vide* Bosman's Guinée, Letter 21, p. 465.—Ed.

educated at Liverpool. Much difficulty was experienced in making the king understand that England is governed by a *queen*, and he laughed heartily when he at last understood what was meant, as did likewise his Majesty's attendants, the interpreter having assured them that "the King of England is a woman."

Cotton is indigenous in Benin, and is spun there and woven into cloth by women. Indigo is also indigenous, and the sugar-cane, from what was observed there, appears to be so likewise. Around the city the land is laid out in square plots, producing yams, plantains, cassada,* and Indian corn, and the soil is of a dark rich colour.

Mr. Smith's watch was much admired, and a pocket-compass which he carried was looked upon with astonishment and fear, as always pointing to the white man's country! A rocket fired at night in presence of the Captain of War caused surprise and delight, and called forth from the people loud cheers for the "Eboes," as they call Europeans.

The melancholy fact remains to be stated, that, soon after returning to the schooner "Warree," Mr. Smith, a very promising young man, died from an attack of dysentery, caught by his having been drenched with rain on the road between Gatto and the city of Benin.

XV.—Mr. ORR's *Report to Governor Latrobe of an Expedition to Gipps's Land in S.E. Australia.*

Melbourne, 27*th April*, 1841.

SIR,—I beg leave to furnish you with a report of the expedition made to Corner Inlet, and from thence overland to Melbourne, as correct as could be drawn up from the hasty notes taken by myself and the gentleman who came hither overland.

We sailed from this port in the barque "Singapore" on the 6th of February, and on the 13th of the same month made the entrance of Corner Inlet, the weather being clear, with a favourable breeze from the S. We were enabled minutely to observe the appearance, and form a true estimate of the character of the harbour. The vessel was kept close in-shore after passing Sealers' Cove, and passed between a large island (called Rabbit Island, as it abounded with those animals) and the main land, a passage of about 1½ mile wide, where we carried from 2½ to 4 fathoms of water. We found the passage by sounding ahead, pretty close in-shore, and had not less than 2 fathoms water till the middle of the entrance bore about N.W.: we then came into the deep channel, and had from 10 to 25 fathoms, till we came to a safe anchorage in 7 fathoms, under the lee of the S.W. head

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* Jatropha Manihot or rather Manioca or Mandioca, its Brazilian name.—ED.

of the entrance. Our efforts were first directed to find an entrance to Gipps's Land, and we surveyed the harbour all round, which occupied us 4 days; but our exertions were unavailing, and we were compelled, after very great delay and fatigue, to direct our attention to another quarter. By travelling along the beach we arrived at the wreck of the "Clonmel," from which we descried what Capt. Lewis has described as an inland sea, which is, however, only a channel communicating with Corner Inlet.

After surveying this channel for 10 days, we discovered a fresh-water creek or river about 10 yards wide at its entrance, which we called the "Terra," in compliment to our native guide, and afterwards a river, about 20 yards wide at its entrance, which we called the "Albert," in honour of her most gracious Majesty's Consort: near this river we found a good landing-place, where we landed all the stores, horses and cattle belonging to the party. A storehouse and other buildings were erected, and a sufficient number of men left to protect them. The situation of this river bears about N.N.E. from the high mountains of Wilson's Promontory, being distant about 10 miles from the Terra River, the country to the N. being also very good.

Should there be a township formed at the present encampment, it is proposed to call it "Albert." This is a beautiful spot: at low water the receding tide leaves uncovered a fine yellow sand, with a narrow channel meandering through it. At high water the scene is more striking, and presents an extensive sheet of water with the lofty mountains near it, forming a splendid panoramic view. It is my opinion that, as soon as the channel is properly surveyed, vessels of considerable burthen will, at high water, get within a short distance of the encampment.

The greater number of our party having resolved to return overland to Melbourne, with the intention of exploring the intermediate country, and discovering, if possible, a good road through it, the "Singapore" set sail again for Melbourne, after lying in Corner Inlet for nearly five weeks.

On the 23rd of March the party started from the encampment, with eight horses and provisions for three weeks, and travelled up the right bank of the Terra for 9 miles, after crossing which, they proceeded about 7 miles N.E., where they discovered a marked tree-line running due North; by following this line they conjectured that they would come upon a good place for crossing the River La Trobe, and they therefore followed the same course till they arrived at a height, where they encamped for the night. The land in the neighbourhood was extremely barren.

On the 24th the tree-line, which continued due N., was still followed for 12 miles, which brought them to the top of a high hill, whence they could perceive Wilson's Promontory S.E.,* about

* S.W., as appears from what follows.—ED.

17 miles. They descended this hill, and continued in the same course till they came to a small stream surrounded by rich pasturage, where they encamped for the night. On the 25th, by continuing along the marked line for about a mile N.W., they arrived at an eminence, from which they obtained a Pisgah-view of the vast and fertile plain forming the interior of Gipps's Land. After a journey from this hill of about 9 miles N.E., they arrived at the banks of the La Trobe, a river laid down by Count Streletski as running S.W., but its true course is due E.

On the 26th, the La Trobe was followed almost due W.,* bordered by rich plains and reedy swamps. After travelling about 11 miles, they arrived at a crossing-place where the river is about 30 yards wide and only 3 feet deep. A N.W. direction was then followed till they arrived at the plains, whence they observed the Snowy Mountains, the sublimity of which, contrasted with the beauties of the surrounding scene, presented a view the most enchanting. The plain is about 20 miles by 8. After crossing it, they came upon the River Maconochie which is much smaller than the La Trobe.

On the 28th, the Maconochie was crossed; and an easterly course followed for 4 miles across a beautiful plain; and they some time afterwards arrived at Count Streletski's encampment near the Barney. This river is there about 20 yards wide, and 2 feet deep; and its junction with the Maconochie is about 3 miles farther down. After crossing the Barney, a due eastern course was still kept, and the party arrived at the Dunlop River, there 80 yards wide and 4 fathoms deep.

On the 29th, they travelled five miles down the Dunlop, where they perceived at a distance a large inland lake 6 miles broad, and stretching for about 20 miles from E. to W. It receives the waters of the La Trobe, Maconochie, Barney, Dunlop and Perry Rivers; this lake was called "Wellington." Wilson's Promontory was also perceived from this place; its southern extremity bearing S.W. $\frac{1}{2}$ S., and its northern end S.W. by W., distant from the western extremity of the lake about 50 miles, and from the encampment about 20 miles.

On the 30th, the party began their journey to Melbourne, and re-crossed the Barney.

On the 31st, they continued a due western course over the plain between the Barney and Maconochie, and proceeded along the banks of the latter for 12 miles.

On the 1st of April, they travelled from the Maconochie S.W. about 22 miles.

On the 2nd, after continuing their route for about 5 miles, they discovered a fine river, supposed to be the La Trobe, run-

* In the original "quære E." has been added, but if they followed the river towards its source their course is rightly given.—ED.

ning eastwards, near which place it is joined by a small stream, which they called the Kinghorn.

On the 3rd, they crossed the La Trobe, and proceeded N.W. by W. for about 6 miles, when they crossed another river called Kirsopp.

The remainder of the journey was pursued with much difficulty; the party was obliged to cut a road for more than 30 miles through dense brushwood, and reached Mr. Turnbull's Station on the 11th, very much fatigued, about 35 miles from Melbourne, near Western Port.

The country thus explored is generally well watered. The banks of its rivers are lined with every kind of the finest timber usually found in this colony; and the intervening land is either gently undulating or quite level, having a rich alluvial soil, supposed to be formed by the deposits of the numerous rivers which descend from the Snowy Mountains. Throughout the whole of Gipps's Land scarcely a rock was to be seen.

I have the honour to be, Sir, &c.,

JOHN ORR.

XVI.—*An Account of the Chatham Islands.* Communicated by Dr. ERNEST DIEFFENBACH, M.D., Naturalist to the New Zealand Company, and printed with its concurrence.

THE group, in the Southern Pacific Ocean, called the Chatham Islands, was discovered by Lieutenant William Robert Broughton, of His Majesty's brig "Chatham," who hoisted the union-flag on the largest of the islands, and took possession of it, in the name of His Britannic Majesty, on the 29th of November, 1791. He anchored in Waitangi, or, as he calls it, Skirmish Bay, and had some intercourse with the natives; but a misunderstanding having arisen between the latter and the Europeans, one of the natives was killed, and thus terminated abruptly the discoverer's short visit. The natives did not appear ever to have seen a ship. Lieutenant Broughton ascertained Cape Young to be in latitude 43° 48′ S., and longitude 176° 58′ W.; two small rocky isles, called the "Two Sisters," to the N.W., being in latitude 43° 41′ S., and longitude 177° 11′ W.*

I visited the largest island of this group in the year 1840, in the barque "Cuba." The purchases of land in New Zealand by the New Zealand Company having suddenly terminated in consequence of a proclamation of His Excellency the Governor, the "Cuba" was despatched to this group of islands, in order to purchase them, as they were not included within the limits specified in the proclamation; and I was attached to that expedition as naturalist. Twelve days after we sailed from Port Nicholson

* Vancouver's Voyage to the North Pacific Ocean, vol. i.

we anchored in Waitangi Bay, in the middle of May, 1840, and remained constantly on the coast till the 26th of July.

The following is an abstract of what I have been able to ascertain with respect to the islands, partly from our own observations, partly from the reports of whalers and sealers, who had frequented and become well acquainted with all the islands and reefs which compose this small archipelago.

In my chart I have retained the native names, and I do so in my narrative likewise: were that method universally followed, much confusion would be prevented.

The whole group consists of three islands: a large one called Ware-kauri by the natives, and Chatham Island by its first discoverer; a smaller one, named Rangi-haute, or Pitt's Island; and a third, called Rangatira, or South-east Island. In some charts or rather sketches, an island is laid down, called Cornwallis's Island,* but I have been repeatedly assured that no such island exists; and that a rock, called, from its shape, "The Pyramid," must have been mistaken for it. There are also, to the N.W., Rangitutahi, or the Two Sisters; to the E., the Forty-fourth Degree Isles; and some reefs, which will be described hereafter.

Ware-kauri has nearly the form of a horse-shoe, or rather that of an indented square, the four sides of which are directed towards the four points of the compass. On its west side, where ships coming from New Zealand will generally first make the land, it stretches in a semicircle from S.W. to N.W., so as to form a deep bight. The land has there an undulating surface of small elevation, and is overreached to the N. and N.W. by higher insulated hills, which have either regular pyramidical forms or are irregular and massive in shape. With the exception of two hillocks at the S.W. point of the island, which the natives name Wakaïwa, no hills are visible in that direction; but the land rises gradually from the shore, which is rocky, and clothed with verdure to the water's edge, and at the top of the slope spreads out into a level or undulating surface. On advancing towards the inner part of the bight, a red cliff, or rather bluff, becomes visible, which forms the southern headland of a smaller inlet into the larger bight, the northern head of which is a bluff of the same description. The distance between these two bluffs is by measurement 3 miles; the beach between them is sandy, and bordered by low hills. This inlet has a very regular, semicircular form; and under the southern bluff is the principal harbour, called Waitangi. From the northern bluff the beach becomes again sandy for some miles, and afterwards rocky, which it continues to be to the N.W. point of the island; being indented by

* Cornwallis's Islands are marked as three rocks or islets in Mr. J. Arrowsmith's chart of the Pacific Ocean (1832), and appear to correspond nearly with the Starkey Reef in the author's chart.—Ed.

four small bays, three of which are close together, the fourth being near to the N.W. point. These bays open to the S.E. by E., and two of them, though small, are good harbours.

The direct distance, in a straight line, from the S.W. to the N.W. point of the island is 25 miles; measured along the beach the distance is about 40 miles; whence it appears that the bight forms a deep curve.

The northern side of the island runs nearly from W. to E., and forms several wide, open bays: to the westward the shore is flat, and the headlands of the bays run out in long, wooded tongues of land. About 10 miles from the N.W. point there is a group of irregular hills, which terminates in a rocky precipice towards the sea, from the foot of which runs out a spit with a level beach. These hills are called Maunga-nuï (the high mountain), although they are of very inconsiderable elevation. This spit forms one termination of an open bay, stretching about 10 miles along the coast. Its eastern boundary is a headland terminating in a hilly promontory, the sides of which are steep or perpendicular. The shore between them consists generally of sand-hills, which are wooded to a short distance inland, and are either shelving or cut down into cliffs by the action of the waves, so as so show their geological structure. In the middle of this bight, four needle-shaped rocks lie off the shore, from which they are distant about a cable's length. The beach itself consists of a fine sand. On the other side of the headland, the shore retreats again, and runs for about 15 miles to the eastward with a broad beach and low wooded hills. Although the beach is sandy, rocks spread along the shore are left uncovered by the sea at low water: this beach is terminated by a long point, behind which, very near to the N.E. end of the island, there is a small bay, Kaïnga roa, with an entrance partly obstructed by rocks. Its N.E. end is extremely rocky; and its outermost point is formed by an island, or rather a peninsula, called Wakuru, as the channel which separates it from the main island is dry at low water.

The length of this northern shore is about 48 miles; but of course more when reckoned along the beach, on account of its many curves and indentations.

The coast continues to be rocky on the E. side of the island, when it again forms a bay nearly 2 miles long, enclosed by a broad sandy beach and low wooded hills. Rocks, most of them only visible at low water, are everywhere scattered along the shore; and, with easterly winds, a heavy surf and high breakers roll over them for several miles from the land. The southern head of this beach is perfectly rocky, and from thence a long, deep bay extends to the S.E. point of the island. Sand-hills are thrown up along the coast, and stunted shrubs cover them on the weather-side. The S.E. point is formed by a hilly promontory covered with wood.

The distance from the N.E. to the S.E. point of the island is 25 miles in a straight line, and 35 miles along the shore.

The southern shore is abrupt and precipitous; the land on the summit of the cliffs is level, and covered with trees. Small streamlets trickle down the cliffs, and clothe their face with herbage.

In this general description of the coasts, I have mentioned several larger or smaller bays; and, as they form the harbours of the island, I shall now attempt to give a more detailed description of them.

The first is Waitangi Bay: it is situate in 43° 58′ S., and 176° 38′ W. Though exposed to the N.W. winds, the force of the swell is broken by the N.W. end of the island, and also by a short reef, which runs off from the southern bluff, and may be doubled by ships of any size to half a cable's length. From the south-westerly winds which prevail during a great part of the year, this harbour is completely sheltered. Its general depth of water is from 7 to 12 fathoms, and the best anchorage is in 5 fathoms, off the southern bluff, where the bottom is a firm sand. If a ship anchors farther to the northward, she is more exposed to the swell occasioned by long north-westerly gales; and the danger increases if she anchors too near the shore.

The tide in this place comes from the southward, but is very irregular, generally recurring only once in twenty-four hours; and at changes, it rises to about 6 feet. If easterly and southerly winds have long prevailed, the tide cannot be perceived at all, and its force is hardly ever perceptible at any time.

The land in the neighbourhood of this harbour is the richest in the island, being a black loam. For some years past this harbour has been much visited by ships for laying in fuel, provisions, and water, which can easily be procured there. During my stay, there were never less than five vessels lying in this harbour; and, in the whole whaling-season of 1840, thirty vessels came hither for refreshments.

For ship-timber, the wood of the island is not fit: it can only be used for inconsiderable repairs.

A cargo can be landed at all times at a place where there is no surf at all, and the water is constantly smooth.

The next harbour which the "Cuba" entered is Wanga roa, to the northward of Waitangi. This bay is an oval, nearly a mile deep, its extreme points being half a mile distant from each other. The best anchorage is about two-thirds up the bay, somewhat nearer to the western than to the eastern shore, in 6 fathoms water, with a soft sandy bottom. The anchorage is protected from N.W. winds by the land, and from S.W. winds by the lee of the western side of the harbour. The tides are here also irregular. The harbour of Waitangi is, however, preferable,

as the country is here bare of wood, and uninviting, being merely an undulating boggy moor. Provisions also must be brought by the natives from a distance, for there are few cultivated spots near the bay: but, as two Europeans have already settled here, this harbour will doubtless be hereafter of some importance, as the best of the four in this neighbourhood.

The two others to the eastward of Wanga roa, called Wanga moe and Wangatehe, are nearly similar to Wanga roa, and perhaps offer the same advantages; but they have not yet been tried, and there is nothing particular to recommend them.

The bay to the westward of Wanga roa, Pohaute, has nearly the same shape, but is more sheltered. The land around it is also richer and more cultivated. It was formerly the principal resort of vessels in quest of seals; and, as a large French whaler was captured there by the natives, it evidently has a good anchorage.

The northern shore of the island is much exposed, and could only serve as a roadstead. It has, however, one sheltered bay, 6 miles from the north-eastern extremity, which, when surveyed, may prove a secure harbour; and if such, will be valuable, from its proximity to fine and fertile districts: its name is Kaïnga roa. I have been told that it has an anchorage from 10 to 12 fathoms. The eastern and western extremity of this bay are rocky promontories, each terminated by a spit of reefs, over which breakers are continually seen. The outermost rock of the eastern point is below the surface, but is occasionally covered with breakers. The rocks above water, off the western point, extend to the middle of the entrance of the bay, and are also terminated by a sunken rock 500 yards distant. A ship can enter with a northerly wind between the two sunken rocks, and would be sheltered from all winds by the western point, where there seems to be the best anchorage. On approaching Kaïnga roa from the land, an oval, smooth basin of water, bordered by gently sloping and wooded hills, opens to the view. This water has, however, no connexion with the sea, as I first supposed, but is merely a lagoon of brackish water. A low sandy beach, about 48 yards broad, intervenes between it and the sea, while the latter is hidden from sight by the hills surrounding the lagoon. This lagoon is of little depth, and its reeds and rushes are tenanted by vast flocks of ducks.

The channel by which this port is entered has not yet been surveyed, nor is there any native settlement in its immediate neighbourhood, but there are two on the eastern coast, only 3 miles distant.

The eastern shore has been frequented by whalers and trading vessels. The best anchorages are about 6 miles from the north-east extremity, where a boat can land at all times, and at Oinga, where the hilly foreland offers some protection. But easterly winds often set in suddenly, which happened while the "Cuba"

was lying there, in consequence of which she was driven out, and left an anchor and her long-boat behind.

The irregularity of the coast-line makes it difficult to form a correct estimate of the whole number of square miles contained in the island. At its north-western extremity its breadth does not exceed 4 or 5 miles; from Waitangi harbour to the beach on the eastern side, its breadth is 12 miles; the south-east and southern part of it is the broadest, being about 15 miles. A rough computation gives for the whole surface 477 square nautical miles, or 305,280 acres. Of this, however, 57,600 acres, at least, are water, being lakes, lagoons, &c.: the land therefore cannot amount to more than 247,680 acres. Of these, 100,000 acres may be considered as productive: the rest, for the most part, affording good pasturage.

I shall now speak of the geology of the island, that being the best foundation for an account of its soil, as far as agriculture is concerned. I have already observed that, at its north-western extremity, a chain of hills succeeds to the low undulating surface near the coast. Their form alone is sufficient to point out their structure. Some of them are regular pyramids, with their longest base running from W. to E.; and above, it forms a kind of oblate cone, from which the pyramid rises. Others have a more irregular shape, and consist of rounded stony masses piled on the top of a mound of earth. All these hills have had a volcanic origin, and are formed of either dense and firm, or cellular and amygdaloidal basalt—the cells of which are either empty or filled with white, decomposed carbonate of lime. This rock will furnish an excellent material for roads and buildings.

None of these hills are more than 800 feet in height. The westernmost of them is called Mata Ketaki, or Mount Paterson. Two or three miles distant from it there is a small group of hills, separated from each other by ravines, called Maunga-nui. The extremity of this group, nearest the shore, forms a perpendicular cliff 100 feet high; but it is separated from the sea by a flat beach, a mile and a ½ or 2 miles in breadth.

Three miles distant from Maunga-nuï, near the head of Wanga roa bay, there is another hill of small elevation, called Emo kawa. Three miles from which, near the head of Wanga tehe bay, is Maunga wakai pai, the most regular pyramid, and apparently the highest of all. Only a few miles from it, is Waï papa, likewise pyramidical. The last in the series, and that from which the original name of the island is derived, is Ware Kauri. It is situate about 2 miles from the northern shore, and 15 miles from the north-west end of the island. It consists of several steep declivities, and is wooded. I had no opportunity of ascending it; but it is not higher than the others, and is apparently of the same structure. These are the only hills on the island, excepting two

hillocks at its S.W. end, called Waka kaiwa, which are an excellent sea-mark.

On the northern coast, the receding tide shows the same volcanic rock, and it is found in large fragments from the southern red Bluff to the S.W. end of the island; dykes of it traverse the clayey conglomerate of that Bluff, with an E. or E.N.E. direction, and a depth of a foot or a foot and a ½ broad. In the interior of the island, this rock is also found in large boulders, covering basin-shaped depressions of the surface, and here by its decomposition small masses of milk-white chalcedony are often laid bare.

Notwithstanding these manifest traces of volcanic action, this island does not appear to be subject to earthquakes, and none are remembered by its present inhabitants.

Another series of rocks, which is the most common, and by its occurrence in a stratified state, shows that it had an aqueous origin, is a green slate of a very firm texture, containing much quartz. Its layers have generally a direction from W. by S. to E. by N., and a dip of about 45° southwards. This formation appears principally at the N.W. end of the island, in Wanga tehe, Wanga moe, and Wanga roa bays. In Kaïnga roa Bay, on the northern coast, and on the adjoining part of the eastern, the direction of the strata, which are almost perpendicular, is W. by S. This rock contains frequent laminæ and veins of white quartz, which often swell into compact grey masses, the largest of which I observed near Waï keri, on the eastern coast: it was about 300 cubic feet in thickness, the surrounding softer slate having fallen away by decomposition. When this slate has been decomposed by the action of the water and of the atmosphere, its lighter and softer ingredients are washed away, but the quartz remains, and forms the white sand found on some parts of the beach. This slate breaks into slabs, and can be used in laying the foundations of houses and walls.

This rock, apparently the undermost and oldest in the island, has been traversed by volcanic cones, the rocks of which often contain fragments of the slate altered by the action of volcanic fire.

The next rock in succession is that of which the southern and northern red Bluffs are composed. This is a soft conglomerate of sharp-edged, solid, sharply-angular particles of a brick-coloured clay, cemented together by white carbonate of lime. Sometimes the argillaceous, and at others the calcareous constituents prevail; and if the component parts are coarse, the rock assumes the appearance of a pudding-stone. This rock may be easily examined at the Bluff which forms the southern headland of Waitangi harbour. There it forms either unstratified masses, or a stratification which can be distinguished striking from N.E. to S.E.,

and dipping to the N.W. with an angle of 45°. The redness of this rock is produced by its containing much iron, which often appears in thin slices or in dark shining nodules as brown iron ore, imbedded in the conglomerate.

I have already observed that dykes of basaltic lava traverse the latter: the conglomerate itself contains fragments of volcanic rock, around which it appears to have undergone more or less alteration by fire; and the whole shows manifestly that its present form has been in a great measure occasioned by the agency of heat. In Waitangi a creek empties itself into the sea, the left bank of which is formed by a range of low hills, which are of the same construction as the Bluff, and from the decomposition of this stone mixed with the vegetable mould derived from trees which cover it, a rich, reddish, and very fertile loam has been formed.

On the northern coast, I found a fourth series of rocks, laid bare to the view by the continual fall of the cliffs. Near the beach, the lowermost of the horizontal strata is, for about a mile, a dark green friable sand. Over this, about 3 feet above the level of the sea, there is a horizontal bed, from ½ a foot to a foot thick, of broken decomposed shells of the nautilus and oyster tribe. They are cemented together by a very soft, pepper-coloured sandstone. A calcareous breccia, 1 or 2 feet thick, follows next in order, and consists of comminuted fragments of shells: then comes the pepper-coloured stone above mentioned, alternating with layers of shells; and upon it, to the summit of the cliff, which is about 40 feet high, is a black, loamy, sometimes boggy earth, which, in the latter case, contains the remains of trees or plants. Both the calcareous beds of this formation, and the shelly sand on the beach of this part of the coast, would furnish lime in abundance. In some parts of the island, the rocks consist almost entirely of trunks of trees in the state of lignite, which I observed particularly near Kaïnga roa Bay, but in other places it assumed rather the character of peat. It is difficult to say to what kind of tree this lignite belongs; but impressions of monocotyledonous plants can be easily distinguished.

Geologically speaking, the island of Ware kauri belongs to New Zealand; and this is still further confirmed by its plants and animals. The whalers say that soundings can be obtained between New Zealand and Chatham Island—a remarkable phenomenon, upon which, however, I shall not enlarge here.

Having thus described the structure of the rocks, which may be considered as the skeleton of the island, I shall describe its uppermost coat, which by many will be deemed far more interesting.

This, in the northern half of the island, is generally undulating, deep and boggy. In the hollows, it is often marshy; but, from

its height above the sea, it can everywhere be easily drained. This promises to be highly productive, and equally fit for grain or pasturage. Wherever the superfluous water has been carried off by a natural outlet, a rich vegetation of fern and flax* (phormium tenax) has sprung up, giving additional firmness to the soil by decayed leaves, and yielding a rich harvest to the native planter. This is particularly the case on the low hills above the sea-shore, which are well wooded, and encircle the island with a verdant zone. Where these hills are sandy, the decayed leaves cast by the trees have formed a light, black soil, which the natives prefer for agriculture. The conical hills, which rest on a volcanic rock, have a very rich soil in their neighbourhood, which is generally covered with a vegetation of fern and trees, agreeably mixed together, and these fertile spots are like so many oases rising from the surrounding bog. On the west side of Wanga roa Bay, and at other places between Maunga nuï and Emo kawa, the soil has been set on fire by some cause or other, and is burning slowly beneath the surface: the temperature, also, although neither flames nor fire are visible, is much raised. "Te ahi kaï kaï te one one" (the fire consumes the earth), say the natives; and in consequence of this slow combustion, which had begun before the New Zealand colonists settled here, six years ago, and may, indeed, be traced to a much earlier period, the soil in the neighbourhood, is gradually sinking. The vegetation at these places is extremely vigorous, though the soil is perfectly dry. A phenomenon like this, of a burning soil, is not unparalleled, as in several places beds of coal, accidentally ignited, have continued to burn slowly for a long series of years: this is therefore explicable, without any reference to volcanic agency. What has been already said applies almost exclusively to the northern part of the island, which presents another remarkable feature; viz., several lakes, usually surrounded by gently sloping hills. These lakes are, for the most part, at the back of the low hills which run parallel with the coast, for there is generally an outlet for the water into the sea. They are most frequent near the northern coast, and are usually one or two miles in circumference. There are some also not far from the beach near the western coast; the largest of which is at the head of Waitangi Bay, and about 6 miles in circumference. A river, named Te Manga pe, from 6 to 8 yards broad, drains this lake, and is tributary to another river, which enters Waitangi harbour. The hills surrounding these lakes are slightly wooded, and form a beautiful feature in the Ware kauri landscape. The shores of the Manga pe river are low, and, at some places, its water is stagnant.

* A large, rushy plant, very different from common flax.—Ed.

This lake is separated by a range of low fertile hills from Te Wanga, the largest lake in the island, which is, however, brackish. It is about 25 miles long, and 6 or 7 broad, and therefore occupies a very large portion of the whole island. It is surrounded by hills either wooded or boggy. On its eastern side, it is separated from the sea by low sandhills about 100 yards broad. At one place, the intervening hills disappear, and between the lake and the sea there is only a low sandy beach: the level of the lake is about 2 feet above high-water mark. According to the natives, the sea never encroaches upon it. Its water is only slightly brackish, probably from infiltration, as it is supplied by two large streams which would otherwise make its water fresh. They descend in a serpentine course from a range of low hills which run from N. to S. to the southern extremity of the island. Although only a few yards broad, these streams are deep and rapid, discharging their waters into a long branch of the lake. Both these rivers would be very useful for turning mills. The Wanga lake occasionally empties its waters into the sea, by breaking over its low barriers. This may happen periodically, when it has been sufficiently replenished by its tributaries, or perhaps after particularly wet seasons. In such cases a vast quantity of its waters is discharged. The land at its southern extremity is then left dry to the extent of several miles, and the way from Waï keri, a native settlement on the eastern shore, to Waitangi harbour on the western, is much shortened. The last time that this discharge of the water took place was in 1837. This fact shows that a large part of the lake could easily be drained.

The larger and better part of the island is that to the southward of Waitangi harbour. It has an undulating surface, is not so boggy as the rest, and is either covered with an open forest of moderate sized trees, or with high fern, in which case the land can be brought into cultivation with very little labour. In general the soil is extremely fertile and preferred by the natives, to that of New Zealand, where the soil is often covered with almost impenetrable forests. The winds which sweep over these islands are not sufficiently violent to injure vegetation, and it is only in a few peculiarly exposed places on the coast that the shrubs appear stunted.

It is worthy of remark that some of the streams and rivulets are black, and of a light brown tint even in transmitted light; but this may be easily explained, as they ooze from boggy land. Notwithstanding this, however, the water is excellent, and fit for all purposes. The Mangatu, the principal stream which flows into Waitangi Bay, has a bar at its mouth, which is passable by a boat only at high water; but beyond the bar, the river is navigable for about 3 miles, even at low water, as its depth is

often 12 feet, though its channel is narrow. It then becomes a mere rivulet, which winds its way through a deep valley from E. to W. It rises from a range of hills in the southern part of the island, near the two rivers which discharge themselves into the lake Wanga. The length of the Mangatu is about 12 miles; at its mouth, the left shore is higher than the right, which forms a low land: both are wooded or covered with fern. That strange plant, the karaka tree,* with its glossy leaves, and fruit of a golden yellow, a very handsome dracophyllum, and many other trees and shrubs enlivened by singing birds and the splendid parroquet, together with the unshorn honours of the native forest, form a beautiful and impressive scene. The clear, tranquil and transparent though black, water of these streams reflects every object with a very distinct outline, like a darkened landscape-glass.

On a careful examination of the structure of this island, it is manifest that the sea has left many places bare which were once covered by its waters.

During my stay there, in the months of May, June and July, I always found the climate extremely mild and agreeable. After 8 o'clock in the morning, the thermometer was never below 45°, or above 60° of Fahrenheit's scale, though it was then the winter season. I was often obliged to sleep in the open air, covered only by a light cloak; and though it was sometimes wet with dew in the morning, I never experienced any inconvenience. Being surrounded by the sea, the air is always moist and cool, but never misty, the vapour being carried off by the constant breezes. Even during the winter, the sky is generally cloudless and of the deepest blue. The changes of temperature are neither so sudden nor so frequent as in New Zealand, where they are occasioned by the neighbourhood of high mountains, capped with snow. Chatham Island being far in the ocean, at a distance from any neighbouring land, its heat and cold are both moderated by the sea breeze: but there is no want of rain; and we had showers for a few hours, every week. The prevailing winds are N.E. and S.W. The climate appears very favourable to European constitutions.

This character of the climate is especially evidenced by the state of vegetation, which, though not remarkable either for diversity of species, the beauty of its flowers, or the magnificence of its trees, possesses that freshness which is so peculiar to moist, insular climates, especially to New Zealand, and, in the northern hemisphere, to England. The whole flora is similar to that of New Zealand, though in point of variety it is far inferior. Thus the beautiful pine tribe, of which about a dozen different species are found in New Zealand, has only one representative in Chatham

* Corynacarpus lævigatus (polished club-fruit-tree).—Ed.

Island, a low yew (taxus), with purple berries, growing like our juniper. There are about twelve sorts of fern, all of them found also in New Zealand. Among these a tree-fern is remarkable. I have been assured by the natives that the korau (Cyathea medullaris) also grows here, but I never found it myself.

Rushes, bulrushes, several kinds of grasses and the New Zealand flax (phormium tenax), mixed with a plant of the compositæ (or syngenesious) family, and the eatable fern (pteris esculenta), cover large districts.

Among the trees, the karaka tree (Corynacarpus lævigatus) forms the largest part of the forest. It grows to a greater size here than I have ever seen it in New Zealand, rising to 60 feet in height, with a diameter of from 1 to 3 feet. Its wood is light and spongy, but it furnishes planks, and may be used for several purposes. On the eastern and northern sides of the island, this tree attains its greatest thickness: it is the only tree which the natives can use for making canoes, some of which I have seen nearly 3 feet broad.

Another tree, which, however, is rather scarce, and is of an irregular growth, has a yellow, fragrant wood, like sandel-wood, to which family it probably belongs. It is called kalamu, or karamu.

The tupá kihi (Coriaria sarmentosa) is found among the shrubs: it gives a very beautiful and durable black, and is used by the natives for dyeing the strings of their mats. In New Zealand the natives use, for that purpose, the bark of the hinau tree (Elæocarpus hinau); but, as they did not find that tree on their arrival in Ware kauri, they soon fixed upon another to supply its place.

The esculents planted by the natives are potatoes, different kinds of turnips, cabbages, taro (esculent Arum), and some tobacco, which thrives well, even in winter; and on Pitt's Island, wheat, formerly sown there by sealers, now grows wild. The natives have no maize. A small parroquet, very common in the island, is said to devour the seeds. They have in abundance different sorts of pumpkins, which form a great part of their food.

With regard to the capabilities of the island, it may be affirmed that whatever thrives in England would thrive there also; plantations of forest-trees would improve both the soil and climate, as affording more shelter, and furnishing timber for building. Of fuel there is no want, as lignite and turf are found in sufficient quantity. For the vine, the fruit of which will not ripen without long and considerable summer-heat, this climate is not well suited.

The animal, like the vegetable world is here poor in species, and all the animals, with the exception, perhaps, of one or two birds, are common both to it and New Zealand. Except the Norway rat, there are no quadrupeds; birds and fishes constituting all the remaining portion of the animal tribes, particularly the latter, which are numerous and important. Both the spermaceti and

black whales are seen in abundance off the shore, and visit the east coast, especially in June and the following months. The first whaling station on this coast was established at Oinga in 1840, by a Captain Richard; another was afterwards formed farther northwards. The southern sealers used formerly to visit Ware kauri and the neighbouring islets and reefs, in considerable numbers. Captain Broughton says that most of the natives whom he saw had seal-skin cloaks. At present that is no longer the case, as the seal has nearly disappeared. About twelve years ago, seal-hunting was very profitable, and yielded many thousand skins: the last sealer whom I saw at Ware kauri had got only fifty in two years, and did not expect to get any more.

The birds are more numerous. Vast flocks of the common dark grey duck, snipes, plovers, curlews and redbills inhabit the lakes and sea-shores, and a sand-lark which builds its nest on the ground, abounds in the bushes of phormium and fern. In summer the ducks' eggs furnish the natives with a favourite article of food. The forest is enlivened by numerous tuis or mocking-birds; a little green parroquet flocks in hundreds to the potato-fields, and proves a great nuisance to the farmer by picking up the seed as soon as it is sown. This bird is generally a little larger than the New Zealand parroquet, and is perhaps a different species. The mako-mako, the finest songster in New Zealand, is also found here, and is larger than it is there, which raises a suspicion of its being another species of the honey-eater. The large New Zealand pigeon, called "kúkupa," finds plentiful food here in the fruit of the karaka-tree and the berries of a smilax. There are also three or four small, insectivorous birds. A new kind of rail was formerly very common; but, since cats and dogs have been introduced, it has become very scarce. The natives call this bird meriki, and catch it with nooses. I often heard its short, shrill voice in the bush, and, after much trouble, obtained a living specimen.

Crawfish, lobsters, cockles and other fish abound on the shores, and the fresh-water eel grows to a large size.

The natives of these islands, with an account of whom I conclude my remarks, were found by Captain Broughton to be a cheerful race, full of mirth and laughter, dressed in seal-skins or mats, and courageous enough to resist his landing. The sealers who first visited the island,—and I met with some who had been there ten years ago,—found the natives numerous and healthy, in number at least 1200, and they were received by them with a hearty welcome. What a wretched change has taken place in the short interval which has since elapsed!—a change occasioned by the importation of a large number of New Zealanders brought thither by an European ship. *Not ninety* of the original natives now survive in the whole group; a few years of slavery and degradation

have reduced their numbers, and in a short time every trace of them will be lost, as even the New Zealanders have disdained to intermarry with them!

These original inhabitants call themselves Tuïti; but this name is now scarcely ever heard, as they themselves have adopted the name of Blafello (black fellow), which was kindly bestowed upon them by Europeans, and readily adopted by the New Zealanders. In comparison with the latter, they have indeed a darker shade of the skin, which is, however, by no means universal, as individuals may be found who are of as light a complexion as the former; and the deeper hue of the Chatham Islanders may be in great measure attributed to their greater exposure and still greater uncleanliness. They are neither so tall, muscular nor well proportioned as their western neighbours, especially the women and the younger men. They have often short necks, thick heads, and, when young, prominent paunches; the forehead is often low and sloping, the cheekbones prominent, the eyes narrower, the nose flat and clumsy. Whether straight or curled, all have black, glossy hair; their eyes are of the same colour, and their teeth white and regular, but they have generally a downcast look. Some of the men have well-proportioned forms, and are handsome. They are Polynesians, and not Papuas, and their present state of degradation may be ascribed to the miseries which they suffer from the oppressive sway of the New Zealanders, and from want of sufficient nourishment. These unhappy islanders were in a far different state some years ago; but now they are reduced to the greatest misery: they are the labourers and porters of their masters, who have no notion of anything like moderation in the labour they exact; so that ulcerated backs bent almost double, and emaciated, paralytic limbs with diseased lungs, are the ordinary lot of these ill-fated wretches, to whom death must be a blessing. This is no exaggeration. Almost all whom I saw were living in miserable huts in the open fields; their disposition is morose and taciturn, and it was with difficulty that I could gain their confidence; but, after I had succeeded in doing so, I found them not at all deficient in intellect, and naturally cheerful. To an European, by birth a Dane, who was living with the last surviving daughter of their former chief, and treated them with kindness, having restored some of them to a happier condition, they were much attached, and for him they worked cheerfully. Not only have their numbers been thinned by slavery, but the skulls which are seen lying on the beach, pierced by musket-balls or battered by clubs, show that many of the natives, who were perfectly inoffensive, have been murdered by the New Zealanders; and, when questioned about it, the latter acknowledge the fact; but one tribe always lays it at the door of another. An excess of toes, so as to have six or more on each

foot, is not very uncommon, as is the case also among other savage nations. Sometimes it is difficult to distinguish their sex; and a sealer who had formerly lived among them, told me that they often emasculate their male children by compressing their testicles between stones. This is highly probable, as the island is too deficient in natural resources to provide food for a large population, and no method of preventing an over-population can be more obvious or effectual. On the first arrival of the European sealers, the condition of this people, miserable as it might be, was far superior to what it is now. The fruit of the karaka-tree supplied them with food, which, though acrid and poisonous when fresh, is rendered nutritious by boiling and soaking in running water; fern-roots, sea-eggs (echini) found in the hollows of the rocks, orange-coloured ascidiæ (sea-pears) thrown up by the sea, various kinds of shell-fish, especially haliotis, patella, periwinkles and mussels, eaten either raw or roasted; crabs, lobsters and freshwater fish, especially eels; birds, snared or speared, were all formerly the principal articles of their diet; but they have all now given way to potatoes and pumpkins, and the above-named delicacies are now procured only for the sick. Formerly they were either naked, or wore a thin covering of the fresh leaves of the Phormium tenax, sometimes also a seal-skin. They had no ornaments or decorations, and were not tatooed. Dispersed over the island in small families, they lived without any shelter, or in mere huts near the lakes, and in the thickets. Their government seems to have been patriarchal; their only instruments were knives made of sharp pieces of quartz for cutting; their canoes, called korari, and described by Broughton, are still seen in the island, and were very remarkable; they are like a large sledge made of a wickerwork formed from tough creepers, principally a smilax; their double bottom of wickerwork is bound together by split strips of that creeper, or by pieces of New Zealand flax (phormium); the space between these bottoms is filled up with the buoyant kelp, and these canoes, which are propelled by coarse paddles, go well over the surf. The natives ventured in them even as far as Rangi haute or Rangi tutahi, a distance of nearly 20 miles. Their only articles of furniture were a vessel in the form of a sugar-loaf, for holding water, made of the leaves of the New Zealand flax, and their only weapons, rarely used by them, were clubs.

When the New Zealanders first visited this people, they did not understand their language; but, as it is merely a dialect of that of New Zealand, the natives soon learnt the language of their oppressors, or rather formed an intermediate dialect, differing less in words and construction than in pronunciation. They now seldom use their own dialect, not even among themselves. As far as I could judge, it does not bear so close a relation to that of

New Zealand as to that of Tahiti. The same words are differently accented; the last syllables of a word are often drawled out; *o* is used for *a*, *e* for *aï*, &c., for instance:—

The New Zealand word	Waï, water,	is We.
,,	A'rero, tongue,	is O'rero.
,,	Moe, sleep,	is Mo.
,,	Motu, island,	is Wutu.

Their songs also differ from those of New Zealand. I never heard one of them sing, but a New Zealander once imitated them, and I was struck with the soft and plaintive character of the tune. They therefore do not belong to the same branch of the Polynesian race as the New Zealanders.

No tradition seems to exist among them respecting their origin: they only say that the two from whom they all are descended lived at first in Pitt's Island.

Their ignorance of the use of the phormium, and their inability to work it up as the New Zealanders do, is a remarkable trait of the difference between them; and the mats seen among them by Broughton were no longer found when the sealers first arrived there. It seems to be a sure proof that the natives of Ware kauri are not descended from the New Zealanders, that they possess none of those arts in which the latter are skilled.

The peculiar form of their canoes, noticed above, and their funeral rites, are other indications of a different origin from that of the New Zealanders: the latter deposit their dead in a sitting posture in wooden boxes; the former burnt them. The "Tapu," or Prohibitive Law with respect to sacred or dreaded objects, was common to them with the rest of the great Polynesian race.

But the event which has had so fatal an influence on the condition of the natives of these islands was the importation of various tribes of New Zealanders about 10 years ago (in 1830 or 1831). Mate oro, a chief of the Nga te Awa branch of the Nga te Motunga tribe, and Te Puahi, a chief of the Nga te Toma tribe then living in Port Nicholson, whither they had been driven by the Waï kato tribe from the Mokau, Oneïro, and Komimi rivers, on the western coast of the northern island of New Zealand, were brought to Ware kauri, by two sealers, the latter soon after the former. A pot belonging to the first of these sealers having been placed on sacred ground, was broken by the natives; in consequence of which the crew of the sealer assisted Mate oro, and a pack of bull-dogs was sent in pursuit of the offenders. When found in the interior of the island, Mate oro shot their leader. The Europeans caught twelve of them and hanged them from the trees with their heads downwards, leaving them in that state till they were nearly dead. This refined piece of cruelty, which exceeds the ingenuity of the New Zealanders, is not unhappily

without its parallel in the history of the intercourse of Europeans with the Polynesians. The New Zealand chiefs, however, saw immediately how easy a conquest such a defenceless race would prove to their countrymen who possessed fire-arms. They both returned to Port Nicholson, proposed to their tribes an emigration to the Chatham Islands, and their scheme was willingly adopted, as it put them at once beyond the reach of the Nga te Kahohunu, the proprietors of Port Nicholson, and made them masters of a fine and fertile island, with plenty of slaves to cultivate it. A brig, named the "Lord Rodney," which soon afterwards arrived at Port Nicholson, was hired by them for pigs, flax, mats and potatoes, amounting in value to a considerable sum. The mate remained at Port Nicholson to salt the pork; and in two trips, the whole of the tribes of the Nga te Motunga, and Nga te Toma, with a few of the Kékeri waï and Taranaki tribes, reached Chatham Island. The aborigines were reduced to slavery without opposition, and divided among the different tribes, as was also the land. The tribes of the Nga te Motunga, whose chiefs were E. Mare, Ko teriko and Mate oro, received, as their shares the N.W. end of the island and the greater part of the western coast; Waitangi Bay, the northern and eastern coast and the S.W. part of the island fell to the share of the chiefs of the Nga te Toma, A[illegible] Totara and his brother E tuna, and to the chiefs of the Kékeri waï, Rau moa, and Erau. The number of the New Zealanders was about 800; and by means of the labour of their slaves the land was soon brought into cultivation, so that they could furnish supplies for the thirty or more vessels which annually resort to the island. The aborigines possessed neither dogs nor pigs: the New Zealanders brought the latter, together with potatoes and different kinds of seeds.

The feuds and jealousies which constantly prevail among such rival and independent chieftains as the heads of the New Zealand tribes could not fail to interrupt the harmony of the invaders as soon as they had firmly established themselves in the island; and only four months before our arrival, E Mare with his tribe, envying the position of the Nga te Toma, and invited, as was said, by the captain of a vessel from Sydney, who had promised to buy the land from him as soon as it was conquered, came to Waitangi, and laid siege to the strongholds of the Nga te Toma for the purpose of starving them out, and then exterminating them, and making himself sole possessor of the island. The Nga te Toma were not, however, unprepared, for, having long foreseen what was about to take place, they had laid in provisions, on which they had already subsisted for four months.

On our arrival in Waitangi, the captain of an American whaler informed us of the existing hostilities; and we soon witnessed the firing of muskets from the stoccades of the opposite parties.

E Mare, whose party was established in newly-constructed houses on the left bank of the river, received us with a hearty welcome, and ferried us across to see his fortifications. An armed party of the Nga te 'Motunga, his followers, was stationed there in trenches thrown up behind high pallisadoes, in which they had constructed temporary houses: they occasionally fired into the Pa of the Nga te Toma, which was only about 60 yards distant. The firing, however, ceased on our arrival, and we passed, without any flag of truce, into the Pa of the Nga te Toma. This Pa occupied a large extent of ground: in front was the sea and a broad sandy beach; at the back a low swamp; the besieged had done everything with great skill to secure their position: deep trenches were hollowed out, under the shelter of which they followed their daily occupations: double and triple pallisadoes, often 30 feet high, made of the stems of trees, enclosed the Pa, and were pierced by loopholes, while trenches well covered for the outposts stretched down the sandhills towards the seashore. Te Ahi Totara (burning grass), the principal chief and his people, received us cheerfully, and did not appear to have suffered much from the siege they had sustained. They even offered to furnish us with a stock of potatoes. This, however, as I afterwards learned, was a mere rodomontade, for they had been, for some time, put upon an allowance. To the northward there was a high tower built of logs, in which watch was constantly kept. They were plentifully provided with muskets and ammunition. Some people in this Pa had been dangerously wounded; among them were a young woman and a boy who had been sent to fetch water from the swamp behind them, which was the only place whence they could obtain that indispensable article.

I passed without hindrance into the stoccade of the Nga te Motunga, the opposite party, where I saw a six-pounder and a swivel mounted, but they were not used.

The number of people in the Pa of the Nga te Toma was about 180; in the stoccade of the Nga te Motunga the numbers were more considerable; and there were more able-bodied men. The war had not been taken up by all the families of these tribes: two large parties of the Nga te Toma, living on the eastern coast, had only fortified their villages and laid up a store of provisions, as E Mare had threatened them with extermination after his conquest of the Pa at Waitangi. Many individuals were neutral, and allowed to carry news from one party to the other.

The aborigines were serving their respective masters on each side; but, as slaves, took no part in the contest.

We communicated to both parties the cause of our coming to their island: they were eager to embrace the opportunity of selling their land and of having white colonists established among

them. The existing warfare, however, made our negociation difficult; the agent of the Company considered it as his duty not only to satisfy the claims of both parties, but to save, if possible, the weaker from destruction.

E Mare, who himself did not engage in the war, but was merely an adviser, and Mate oro, his Commander-in-Chief, were from that time our daily guests. Mate oro was the brother of Tipahi, a chief in Queen Charlotte's Sound, who had written introductory letters for us. All the people in the island were at that time suffering from a malignant influenza; and I had a great deal to do in providing them with medicine. Both the New Zealanders and the aborigines universally believed that an European woman, who came to the island a short time before, brought the disease with her, but they made no attempt to stone her on that account, as was done by the populace in a more civilized part of the globe in the time of the cholera, with regard to some physicians whom they supposed to have poisoned the wells.

E Mare proved, on every occasion, a very intelligent and reasonable man. He had been for some time at Sydney, and had visited nearly the whole coast of New Zealand. He drew for me a chart of the Chatham Island, which exceeds in accuracy all the previous sketches made by Europeans. He was remarkably polished in his behaviour, and took the greatest interest in all my inquiries. Our European notions of this people, whom we call the most ferocious savages, are strangely incorrect. There is not, even in their exterior appearance, the slightest ground for this prejudice; and, when provoked, they are not more ferocious than Europeans similarly circumstanced.

All our efforts to bring about peace between E Mare and the Nga te Toma, however, failed. At the beginning of the siege, a boy, son of the former, was killed, and two more persons afterwards: this unhappily made reconciliation impossible. The agent of the company, therefore, concluded an agreement with E Mare for the purchase of all the land claimed by the Nga te Motunga; but that chief would not hear of a tenth part of the land reserved for himself, choosing in preference to reserve a fertile district for himself and his tribe. It was, however, finally settled that, should he afterwards alter his opinion, and prefer mixing with Europeans, he might have leave to do so, and obtain the land reserved for him.

We took E Mare and some of the principal men of his tribe on board, and sailed for Wanga roa, which district he claimed with more reason as his property; the purchase of it also was, therefore, concluded to his satisfaction. The ship then took him back to Waitangi; but I set off with Mr. Hanson, the agent, for the eastern coast, for the purpose of exploring it, and consulting with the natives of the Nga te Toma tribe, who lived there in several small villages,

how they could best save their relations at Waitangi from destruction. It was at last determined that the latter should be removed from Waïtangi to Waï keri, on the E. coast. Accordingly on our return to Waïtangi we informed our besieged friends that we had made an arrangement for their liberation, and it was determined that their removal should take place on the 17th of June.

E Mare was soon aware of our intention, and seemed to be rather inclined to think it right that the Nga te Toma should be removed. On the morning of the day appointed, an American whaler voluntarily gave up the loan of two whale-boats, which, with the Cuba's boats, were willingly manned by her crew. The old men, women, and children, were removed first, and last came the fighting men, in their war dress, duly armed and accoutered, with feathers stuck in their hair, and their naked bodies stained with ochre. The Nga te Motunga regarded all these proceedings with the greatest displeasure, and fired towards the boats, without, however, doing any damage, till our interpreter, who had married into the besieged tribe, and had formerly lived many years among them, encouraged the men in his boat to cheer and discharge their muskets. At this moment their exasperated adversaries fired into the boats. One ball struck the stern, and another an oar, but did no farther damage, and the boats were soon out of their reach.

E Mare, during the whole of these transactions conducted himself in a manner worthy of a civilised man. He at first remonstrated with Mr. Hanson, who was with him, about his right to remove his enemies, and interfere at all, threatening that he would follow the Nga te Toma wherever they went; but he afterwards ordered his men to desist from firing. Self-command is a virtue which the savage possesses in a by far higher degree than the European: it is too often ascribed to fear of our arms, but that is seldom its real cause, as the savage is remarkable for his contempt of death, and in this case fear could not be the passion by which E Mare was moved, as our force was too weak, and as he well knew that any aggression on our part, even in self-defence, would not be countenanced by the government at Sydney.

It was only when the European boats' crew set his people at defiance, and their cheering roused the passions of E Mare's men to the highest degree, that they fired into our boats. The last men quitting the besieged Pa had set fire to all their houses, and the flames spread rapidly among these combustible huts. On seeing this, the Nga te Motunga rushed into the Pa, and then to the beach, whence they fired off their muskets towards the ship, danced their war-dance, uttering the usual yells, and making the customary contortions of the face, which, together with the smoke and flames of the burning village behind them, formed a most striking and fearful picture.

Having now 180 natives aboard, we weighed anchor without delay, and made sail for Waï keri, on the E. coast, not more than 80 miles distant, which, however, on account of easterly winds, we could not reach before the 26th of June. During these nine days, though it may be imagined that we were not very comfortably circumstanced, the natives behaved in a most exemplary manner, and were contented with the very small allowance of provisions which we could afford to give them. The chiefs and aged priests, who were generally on deck during the night, with their arms uplifted to heaven, prayed for better weather. We landed eighty of the party on the 23d in Kaïnga roa, and the rest at Waï keri in the morning of the 26th. At this place, the agent purchased from the whole tribes of the Nga te Toma and the Kékeri waï their right to the possession of the islands, and thus concluded the business for which he was sent.

The other islands which complete the group may be described in a very few words. Rangi haute is about 12 miles long and 8 broad. It consists principally of a mountain of moderate height with a flat summit, and four sides which extend nearly to the coast. It has no harbour. There is a safe passage between it and Ware kauri; and the same, I understand, is the case between Rangi haute and Ranga tira, which latter is a mere rock. On Rangi haute there are twelve of the aboriginal natives. The "Western Reef" is a range of rocks lying off the north-west end of the island, once a favourite resort of seals. The "Cuba" passed between this reef and the main, and found a clear channel.

Rangi tutahi, or "the Sisters," are two pyramidical rocks about 100 feet high, covered with scanty bushes, and frequented by countless numbers of sea-birds. There is a long line of breakers running westwards from these islets, which forms the "North-West Reef."

The rocks which form the "Forty-fourth Degree Islands" were also seen by us; and the "Star Keys," marked by high breakers, were visible from the mast-head. All these rocks were formerly much visited by sealers.

XVII.—*Observations on the Indigenous Tribes of the N.W. Coast of America.* By John Scouler, M.D., F.L.S., &c.

Since the period of the important voyage of Vancouver, the admirable surveys of that navigator have rendered the numerous islands and complicated inlets of the N.W. coast of America familiar to the geographers of Europe. The expeditions by land of Sir A. M'Kenzie, Lewis and Clarke, and the subsequent enterprises of the fur-traders, have explored the countries which extend

from the shores of the Pacific to the western side of the Rocky Mountains, and have discovered the course and origin of the different rivers which flow through that extensive region; but, notwithstanding our pretty correct knowledge of the geography of that remote part of the American continent, we are still, to a great extent, ignorant of the languages and history of the numerous tribes which inhabit its islands and deeply-indented coasts, or have settled along the course of its rivers.

The history of the indigenous tribes of the N.W. coast is the more interesting, since, from the very different physical conditions under which they are placed, they exhibit characters and manners that distinguish them in many respects from the race of hunters who wander over the plains of the Missouri. Westerly winds prevail on the shores of the North Pacific throughout the greater part of the year, and render the climate extremely moist and mild: hence the winters are far more moderate along the W. coast of North America than in corresponding latitudes on the eastern side of the same continent. At the mouth of the Columbia River, situated in nearly the same parallel of latitude as Quebec, snow seldom remains on the ground more than a few hours; and the natives go about, even during winter, with very slight clothing.

The configuration of the coast is another circumstance which has great influence on the habits of the Indians. Abounding in islands, many of them of considerable size, while the shores of the mainland are broken up by numerous inlets resembling the lochs of the western shores of Scotland, the natives obtain their chief supplies of food by fishing, and are thus rendered more sedentary than the tribes which follow the buffalo on the E. side of the Rocky Mountains. Even the inland-tribes of N.W. America are much less exclusively hunters than those which live towards the sources of the Missouri.

Several causes contribute to produce this remarkable difference between the tribes on the eastern and western sides of the mountains. The most abundant supply of game in N. America is that afforded by the buffalo, and this animal has never penetrated to the N.W. coast; at the same time, the Columbia River, Fraser's River, and the other streams on the W. side of the mountains, abound in salmon almost to their source. The inland tribes of the N.W. region reside chiefly on the margins of rivers, where they live on salmon during the summer, and prepare great quantities of the same fish for their winter supply. The produce of the chase is, therefore, with them a secondary consideration. On the E. side of the mountains no supplies of salmon can be obtained; the rivers either flow into fresh-water lakes, or, as is the case with the tributaries of the Mississippi, their sources are too remote from the sea to permit of the immigrations of salmon from

salt to fresh water. The habits of the eastern natives are almost as unsettled as those of the buffalo, whose migrations bring along with them alternations of abundance and starvation.

It is, at least in part, owing to these peculiarities of their physical condition that the habits and social arrangements of the Indians on the opposite sides of the mountains present such a remarkable contrast. The N.W. Indians, especially the coast-tribes, have made considerable progress in the rude arts of savage life. Their canoes are constructed with much skill; their houses, being for permanent residence, have been erected with some forethought and attention to comfort; and their fishing apparatus and articles of domestic economy are far more numerous and elaborate than can be found in the temporary lodge of hunting-tribes. From this settled mode of life, they are more accustomed to continuous labour, and even show considerable aptitude for passing into an agricultural state.

In the following communication, I shall confine my remarks chiefly to the coast-tribes which spread from the Columbia River northwards to Queen Charlotte's Island, as it is with them alone that I am acquainted from personal observation. The information which I have collected would be very meagre, if I had not enjoyed the advantage of obtaining a great amount of valuable material from my friend, Mr. Tolmie, Surgeon to the Hudson's Bay Company, who has resided for eight years on the N.W. coast, and has paid much attention to the languages and manners of the Indians. To this gentleman I am indebted for the extensive vocabularies appended to this paper, as likewise for numerous and interesting remarks on the manners and physical character of the Indians, and for a collection of crania of the different Northern Tribes. The vocabularies collected by Mr. Tolmie will, I trust, be of value to those who take an interest in the history of the aboriginal tribes of North America; especially as they exhibit more copious information respecting the north-western dialects than is to be found in any publication with which I am acquainted. These Tables contain very extensive vocabularies of no fewer than seventeen different dialects, and I have reason to know that the utmost pains have been bestowed on rendering them as accurate as possible.

In attempting a description of the numerous tribes of the N.W. coast, I shall be guided chiefly by considerations founded on their physical character, manners and customs, and on the affinities of their languages. The Indian tribes of the N.W. may be divided into two groups, the Insular and the Inland, or those who inhabit the islands and adjacent shores of the mainland, and subsist almost entirely by fishing; and those who live in the interior, and are partly hunters. This division is perhaps arbitrary, or at least, imperfect, as there are several tribes whose affinities with either group is obscure; but as these difficulties will be fully

stated, it is hoped this arrangement will give rise to no misapprehension.

The Insular Group comprehends a great number of Tribes extending along the shores of the Pacific, from the Columbia River to Sitga,* and up to the Polar Regions, where the northern members of this group are conterminous with the Esquimaux. The Insular and Coast Tribes of Indians may be divided into two Families, the Northern and Southern. The Northern Family consists of numerous little tribes or communities, which have spread from the Arctic Circle to the northern extremity of Quadra and Vancouver's Island. All the Indian tribes in the Russian territory belong to this Family, and their language appears, from the scanty vocabulary published by Wrangel, to be very nearly identical with that spoken in Queen Charlotte's Island.

This northern family, if we select the Queen Charlotte's Islanders as specimens, are by far the best looking, most intelligent and energetic people on the N.W. coast, and in every respect contrast favourably with the Southern Tribes of Nootka Sound and the Columbia. They are taller and stronger than the Nootkans, their limbs are better formed, and their carriage is much bolder. They permit the hair of the upper lip to grow, and their mustachios are often as strong as those of Europeans. Their complexion, when they are washed and free from paint, is as white as that of the people of the S. of Europe. Their women practise a kind of deformity which is unknown among the Southern Tribes. An incision is made in the lower lip in a direction parallel to its length, and an oval piece of wood introduced into the wound, is worn by them on all occasions. The custom of flattening the head, so common among the Southern Tribes, appears to be unknown in any of the districts to the N. of Quadra and Vancouver's Island. The Indians of the Northern Family are remarkable for their ingenuity and mechanical dexterity in the construction of their canoes, houses and different warlike or fishing implements. They construct drinking-vessels, tobacco-pipes, &c. from a soft argillaceous stone, and these articles are remarkable for the symmetry of their form, and the exceedingly elaborate and intricate figures which are carved upon them. With respect to carving and a faculty for imitation, the Queen Charlotte's Islanders are equal to the most ingenious of the Polynesian Tribes.

The more Northern Tribes of this family inhabit the Russian territory, and are enumerated by Wrangel† under the names of Koloshes, Ugalentzes, Atnas, Kolchans, and Kenäies. The Tun Ghaase are the most northern Indians of this family which have any intercourse with English fur-traders: they are a small tribe, inhabiting the S.E. corner of Prince of Wales's Archipelago. Their language, as Mr. Tolmie conjectured, is nearly the same

* Also Sitkha, or Sitka.—Ed.

† Or rather Baer in Wrangel, p. 226.—Ed.

as that spoken at Sitga. Mr. Tolmie states that they are the bravest people, as well as the best hunters, on the coast, and have, from the earliest period, possessed and deserved the confidence of the Whites.

The *Haidah* tribes of the Northern Family inhabit Queen Charlotte's Island, but a colony of this people, called the Kyganies, have settled at the southern extremity of Prince of Wales's Archipelago, and in the Northern Island. These Kygánies have had more intercourse with the Whites, and consider themselves more civilised than the other tribes, whom they regard with feelings of contempt. They are very cleanly, fierce and daring; and when unapprehensive of hostilities from abroad, keep up their warlike habits by having an occasional broil among themselves. In former times, when the sea-otter abounded, the Massettes,* Skittegás,† Cumshawás, and other (Haidah) tribes inhabiting the eastern shores of Queen Charlotte's Island, were among the most wealthy on the coast: since the sea-otter has been destroyed, the Haidahs have become poor, and have been reduced to other plans in order to procure blankets. They fabricate most of the curiosities found on the coast, but their staple article is the potato, which they sell in great quantities to the mainland tribes. In the autumn, there is quite a competition among the Haidahs who shall carry early potatoes to the mainland. Fleets of from forty to fifty canoes arrive early in September, and proceed to the different villages of the Chimmesyan‡ nation, and the potato-fair seldom ends without more or less fighting. They also manufacture and export canoes, and are themselves very venturous on the deep. When they visit the mainland, they are bold and treacherous, and always ready for mischief.

This account of the Haidah tribes has been furnished by Mr. Tolmie, and is the more interesting, as it affords very satisfactory evidence of the aptitude of the Queen Charlotte's Islanders to adopt the customs and improvements of civilised life. When Europeans began to frequent the N.W. coast for the purpose of collecting furs, especially those of the sea-otter, the shores of Queen Charlotte's Island afforded an abundant supply of this valuable article, and the Haidah tribes carried on an extensive commerce with the English and Americans. During the period when this trade was flourishing, a taste for European commodities was created, which still continues, although the sea-otter, the sole article in return for which those foreign luxuries could be obtained, has been almost extirpated. In the meanwhile, the Haidahs had learned to cultivate the potato, and to supply the continental tribes with provisions. They now obtain their blankets from the latter, who in their turn procure them from the fur-traders in exchange for their beaver-skins. The taking of this first step in improvement distinguishes the Queen Charlotte's

* Or Másscets.—Ed. † Or Skiddegeet.—Ed. ‡ Chemmesyan?—Ed.

Islanders from the Southern Tribes of the Columbia River, who have enjoyed much greater advantages. Although Europeans have been settled among the Cheenooks of the Columbia for twenty-five years, they cannot be induced to adopt the cultivation of the potato, or to breed pigs and poultry, notwithstanding the example has been set them for so long a period. This inferiority of the tribes on the Columbia may be accounted for by the vast abundance of salmon and sturgeon which that river supplies, as well as by the natural indolence of the people.

The numerous tribes which inhabit the islands and coasts from Queen Charlotte's Island to 60° N. lat., unquestionably belong to one Northern Family. The points of similarity between them are numerous and unequivocal. They resemble each other in physical features and intellectual character: they are bold, industrious and ingenious, when compared with the Southern Family. They differ also from the southern tribes in arbitrary customs: thus the practice of flattening the head is unknown among them, while the lip-ornament worn by the women of the Northern Family is not used by any tribe to the south of Quadra and Vancouver's Island. The most decisive circumstance is, however, the near affinity of all the northern dialects. In as far as I have been able to obtain vocabularies, it appears that the numbers and names of simple and familiar objects are often the same among all these tribes. It is true the language of the Southern Branch appears to be radically the same as that of the Northern Family; but, at the same time, it appears that the dialects of the Northern Section differ less from each other than any one of them does from the language spoken at Nootka Sound, or on the banks of the Columbia.

The *Chimmesyans* appear to belong to the Northern Family, although they have some affinity with the Southern Division. This extensive tribe of Indians inhabits the coast of the mainland from 55° 30′ N., down to 53° 30′ N. These Indians resemble the Haidahs in the energy of their character, and, according to Mr. Tolmie, are much more active and cleanly than the tribes to the south. Although the language of the Chimmesyans appears to have more affinity with that of the Southern than of the Northern tribes, I have ventured to refer them to the latter Family. In their physical features, they agree with the northern tribes. On comparing a series of crania of the Chimmesyans with a similar series obtained from the burying places of the Cheenooks on the Columbia River, it is found that a very considerable difference exists between them; both the Cheenook and Chimmesyan skulls are characterised by very broad and high cheek-bones, with a receding forehead, but in their secondary features they differ remarkably. The Cheenook cranium, even when not flattened, is long and narrow, compressed laterally, and keel-shaped, like the skull of the Esquimaux, while the Chimmesyan's head is much broader between the parietal and temporal bones, and its vertex is

remarkably flat. These characters are so apparent, that there is no difficulty in distinguishing the crania of the two tribes.

Mr. Tolmie suspects that the language of the Chimmesyan has a considerable affinity with that of the Carriens* of New Caledonia; and if this conjecture be correct, it would prove that the Northern Insular Race has penetrated far into the interior of the continent.

The second or Southern Family of the insular tribes may be also denominated *Nootka-Columbian*, from the two places in which they have had most intercourse with Europeans, and where their manners and language are best known. This division comprehends the tribes inhabiting Quadra and Vancouver's Island, and the adjacent inlets of the mainland, down to the Columbia River, and perhaps as far S. as Umpqua† river and the northern part of New California. The numerous tribes of this Family, though intimately related to the Northern Division, by affinity of language and many words common to the dialects of both, differ from the latter in physical character, and also in arbitrary customs. The Nootka-Columbians are of smaller stature than the Northern Tribes; they are usually fatter and more muscular; their cheekbones are prominent, and their complexion, though light, has more of a copper hue. They are far more indolent, filthy and inactive than the Haidah tribes. The legs of the women, especially those of the slaves, are often swollen as if œdematous, so that the leg appears of an uniform thickness from the ankle to the calf. This appears to depend, not on any original physical peculiarity, but on the circumstance of their wearing a garter or ligature, which obstructs the passage of the blood through the subcutaneous veins. The limbs of both sexes are ill-formed, and the toes turned inwards, as if they had been accustomed to be constantly on horseback. This peculiarity, which I had observed among the natives of the Columbia, had been noticed by Moziño long before among the inhabitants of Nootka. 'The ankle and extremities of the toes,' he remarks,‡ 'are usually turned inwards, which is probably occasioned by the manner in which they are swathed up in infancy, and afterwards from the manner in which they sit in their canoes.' We may also attribute to this cause their ungraceful mode of walking, and a kind of swelling which is observed especially among the women.

The most remarkable physical peculiarity observed in this Family is one produced by artificial means. The practice of flattening the head, unknown among the Haidah tribes, is universal among the Nootka-Columbians, and prevails along the north-west coast, from Salmon River in lat. 53° 30′ N., to Umpqua River, in lat. 46° N.

* Carriers?—Ed. † Or Umqua.—Ed.
‡ Moziño, Viage de la Sutil y Mexicana, p. 121.

The process by which the head is compressed is very simple. Immediately after birth, the child is placed in a sort of box or cradle, in which there is a small cushion to support the nape of the neck. The occiput rests on the flat board which forms the back of this cradle; a piece of board is attached by means of thongs forming a hinge, to the upper part of the board, and is brought in contact with the forehead, and made fast by means of other thongs. This cradle and compressing-machine the mother carries on her back wherever she goes; and the pressure is steadily applied to its head till the child be able to walk.

This absurd custom is not strictly universal; for the chiefs and freemen are alone permitted to disfigure the heads of their children: the mischimis, or slaves, are not permitted to confer this badge of freedom on their children.*

This strange custom, although far from being unfrequent throughout the whole extent of the American continent, is on the north-west coast confined to the Nootka-Columbians. As we may consider the Tribe of Flat Heads which live towards the sources of the Columbia as a scion of this family, I may be allowed to mention that this custom was well known to several of the tribes that inhabited Peru long before the conquest by Pizarro. This observation is of some importance, especially as Mr. Pentland, and also Professor Tudemann, have thrown out the opinion that the compressed crania found in the ancient tombs of Titicaca owe their singular configuration not to art, but to some original and congenital peculiarity. This, however, does not appear to be a very probable supposition; for the ancient skulls of Titicaca do not exhibit a greater amount of deformity than the artificially-flattened heads of the Nootkans and Cheenooks.† That the skulls of Titicaca have been distorted by artificial pressure is almost certain, since Garcilaso de la Vega assures us that the process of flattening was actually practised by the inhabitants of the province of Canari at the period of its conquest by the Inca Tupac Yupanqui. The mode of flattening is described with much detail by Garcilaso: the very terms of his narrative might be applied with as much propriety to the present Cheenooks of the Columbia as to the Canaris of Peru, a century before the Spaniards arrived among them.‡

* For a more particular account of this process, a paper by the author, in the Zoological Journal, vol. iv. p. 304, may be consulted.

† Compare the figure of a skull from Titicaca (Pritchard, Physical History of Mankind, vol. i. pl. 1, 2nd ed.) with the skulls of Cheenooks figured in the Zool. Journal, vol. iv. plates 9, 10.

‡ "Esta nacion trahía por divisa la cabeza tableada, que en naciendo la criatura, le ponian una tablilla en la frente y otra en el coladrillo, y las ataban ambas, y cada dia las iban apretando y juntando mas y mas. Siempre tenían la criatura hechada de espaldas, y no le quitaban las tablillas hasta los tres años. Sacaban las cabezas feismas (?) y así por opprobrio á qualquera Indio que tiene la frente mas ancho que lo ordinario, ó el cogote llano, que dicían Palta-uma, que (es) cabeza de Palta." Garcilaso de la Vega, Historia de Perú, Parte i. libr. cap. 11.

We find many other customs among the Nootka-Columbians which do not exist among the more northern Haidah Tribes. Mr. Tolmie gives the following interesting account of the *Haeeltzuk*, the most northern of the Nootka-Columbian Family:—They are extremely dirty in their habits, and comparatively effeminate in their appearance. They live at peace among themselves, and are the most northern tribe that flatten the cranium. Their chiefs have but little influence except as conjurers. When the salmon season is past, and provisions for the winter have been laid in, the feasting and conjuring begin. The conjurer is called Tzeet-tzaiak. The chief retires to the forest, where he secludes himself, pretending to fast, but is secretly supplied with food by a confidant. While there he is called Taamish, and is supposed to hold communication with the Nawlok. Unexpectedly he makes his appearance in the village, dressed in a robe of black bear-skin, his head bound with a chaplet and a collar of wrought alder-bark, which is of a bright red colour. The women, children and many of the men, fly at his approach; but some one, desirous of distinction, boldly awaits and presents his bared arm, and from its outward surface the Taamish bites and swallows one or more large mouthfuls, and whoever meets him is obliged to submit to this ordeal. The biter acquires renown by being able to seize a large morsel between his incisors, and to remove it with dexterity without the aid of a knife, and the person bitten by enduring with fortitude. The Indians are as proud of these scars as a soldier can be of wounds acquired in the defence of his country. I have often inquired the reason of this practice, but could only learn that it is "weinah," or valuable. With respect to the Nawlok, Wacash, the chief Taamish and most successful biter among the Haeeltzuk, informed me, rather reluctantly, that he did not see them, but only heard their cries, and that they lived in the mountains, and were not human beings. During the Tzeet-tzaiak,* it is improper to hunt or travel for any purpose. The Haeeltzak are commonly reputed to practise cannibalism; but it is only the Taamish who tastes human flesh, and that in the manner I have mentioned.

The Nawlok of the Haeeltzuk appears to resemble not merely in name but in attributes the Matlose of the Nootkans. Matlose, according to Moziño, is believed by the Nootkans to inhabit the mountains, and is held in the utmost terror by the natives. He is represented as having a monstrous body, covered with black bristles, a head resembling a man's, with the front teeth much stronger and sharper, like those of a bear; he has strong limbs, with fingers and toes armed with great curved claws. His cries make those who hear them fall down prostrate on the ground; and the unhappy individual he strikes is at once torn

* 'During the excursions of the Tzeet-tzaiak'?—Ed.

to pieces. It is not improbable that the suspicion that the Nootkans are cannibals may be traced to the practice of some custom analogous to the Tzeet-tzaiak of the Haeeltzuk.

The Southern, Insular or Nootka-Columbian Group includes a greater number of tribes and a much more numerous population than the Northern or Haidah Family. The most northern tribes belonging to the former are the Haeeltruk and Billechoola. The *Billechoola* dwell on the main land: their chief settlement is on Salmon River, in lat. 52° N.; but they are spread along the margins of the numerous canals or inlets with which this part of the coast abounds. It was on this part of the coast, inhabited by the Billechoola, that Sir A. M'Kenzie first reached the Pacific; and some of the old men of the tribe still remember his visit. The Haeeltzuk, already mentioned, dwell to the south of the Billechoola, and inhabit both the mainland and the northern entrance of Vancouver's Island, from lat. 53° 30′ to lat. 50° 30′ N. These two tribes speak dialects of the same language, and resemble each other in appearance and disposition.

The great Island of Quadra and Vancouver is inhabited by tribes which speak dialects of the same language. The inhabitants of Nootka Sound and the Tlaoquatch, who occupy the south-western points of the island, speak the same language; and whoever will compare the list of Nootkan words given by Moziño, with the Tlaoquatch vocabulary appended to this paper, will find that there is very little difference between them. This language is nearly related to that of the Haeeltzuk on the north, and also to that of the numerous coast-tribes who inhabit the mainland, and have ascended the rivers into the interior. Another and numerous branch of the Nootka-Columbian Family comprehends the various tribes who inhabit the shores of the Gulf of Georgia and to the south of the Columbia River. The more important tribes of this division are the Kawitchen, who dwell at the north of Fraser's River and on the opposite shores of Vancouver's Island: the Noosdalum, of Hood's Canal; the Squallyamish, inhabiting Paget's Sound; and the Cheenooks, around the mouth of the Columbia River, are related to the various families of the Cathlascons,* which have spread to the country of the Cheenooks from the lower falls of the Columbia. All these tribes speak dialects which have much affinity with each other, and with the language spoken at Nootka, and among the Haeeltzuk; but, at the same time, we find many words which have been derived, not from the coast-tribes, but from those who inhabit the interior, and this is peculiarly the case with regard to the Cathlascons.

In the interior of the country we find several tribes whose language and manners differ considerably from those of the inha-

* Or Cathlatscos.—ED.

bitants of the coast. Living, in fact, on the produce of the chase, each tribe occupies a much more extensive district than is required by the ichthyophagous communities situated on the margins of the rivers and inlets.

These Continental Indians consist of two Families, or Groups, whose languages differ considerably, although probably they have been derived from a common source. The first and more northern Indians of the interior may be denominated the Shahaptan Family, and comprehends three tribes—the Shahaptan, or *Nez Percés* of the Canadians; the Kliketat, a scion from the Shahaptans, who now dwell near Mount Rainier, and have advanced towards the falls of the Columbia; and the Okanagan, who inhabit the upper part of Fraser's River and its tributaries: all these tribes speak dialects of the same language, and can understand each other. The Kawitchen tribe, already mentioned, appears, from an examination of their language, to be a mixed race, compounded of Shahaptans and Nootkans, as might be inferred from their position, intermediate between the territories of the Okanagans and Nootkans.

The second Group of Indians inhabiting the interior use a language which is still more remote from that of the insular tribes than that spoken by the Shahaptans: this family includes two tribes, speaking a similar language, which is disseminated over a very extensive district to the south of the Columbia. The Kalapooiah tribe inhabits the fertile Willa mat plains; and the second tribe, called the Yamkallie, lives more in the interior, towards the sources of the Willa mat* River. The Umpqua, or tribes residing on the Umpqua River towards New California, appear to belong to this Family, although their language is rather more remote from the Kalapooiah than the Yamkallie is. The Cathlascon tribes, which inhabit the Columbia River, are, I am convinced, intimately related to the Kalapooiah Family: this affinity has never, as far as I am aware, been suspected by the Europeans residing on the N.W. coast; but a careful comparison of the vocabularies of the different dialects will leave no doubt of this fact. If we examine the numerous names of simple objects in the Cathlascon language, we shall find that they are partly Kalapooiah and partly Nootkan; and that here, as at the mouth of Fraser's River, a blending of the languages of the coast and the interior has taken place.

It is a very difficult task to trace affinities of the very numerous tribes of Indians scattered over so extensive a region as the north-western portion of the American continent. None of the dialects spoken in this region have been preserved in books or vocabularies, except those of California, into which the Spanish

* Or Wallamatte.—Ed.

missionaries have translated a few of their devotional works.* It is therefore scarcely necessary to remark that the grammatical structure of the north-western dialects has not yet been investigated. We can, for that reason, trace the affinities of those languages only by a comparison of words similar in sound and signification. After a careful investigation of the languages of the N.W. of America (of which sixteen vocabularies are subjoined), it appears that the differences which exist among them are far less manifest and decided than a superficial investigation of them would lead us to suppose. Even in the languages of the most remote tribes, as the Haidah of Queen Charlotte's Island, and the Kalapooiah of the Willa mat plains, we discover words which are nearly identical in form and meaning, and the number of words common to any two tribes is, as might be expected, much the greatest in the Gulf of Georgia, or on the Columbia River, where a very extensive intercourse is kept up between the tribes of the coast and those of the interior.

As an examination of numerous vocabularies indicates that all these dialects have more or less intimate relations with each other, instead of a numerous group of simple and primary languages, we have at the very utmost only two simple tongues, the combinations of which in various proportions have given rise to all the subordinate idioms before mentioned. These circumstances admit of being explained upon a very simple hypothesis: the inhabitants of the islands appear to have established themselves on the mainland along the inlets and the course of the principal streams, and to have been thus mingled with the inhabitants of the interior, speaking a different tongue; and from these migrations the various compound dialects have resulted. That such mixtures and blendings of tribes speaking different languages have taken place admits of no doubt. The Cathlascons of the lower part of the Columbia are unquestionably a mixture of Cheenooks and Kalapooiahs, as the Kawitchens are of the Okanagans and Nootkans.

It has been already stated that many of the differences between the dialects are more apparent than real, and that a careful examination will discover many unexpected analogies between them: thus, if we find on comparing the numerals and names of the more common objects in the dialects of two conterminous tribes, that they are very different in both, it by no means follows that these should be considered as two primary languages; on the contrary, such discrepancies often admit of a very satisfactory explanation. In the languages of the North-West Coast the names even of simple and familiar objects, such as the sun, moon, day, night, &c., are not always nouns, but are not unfrequently com-

* A small Primer in the Shahaptan language has been published by the American missionaries settled with that tribe.

pound words and epithets. In this case, unless we possessed an intimate knowledge of the influence of the verbs, and the nature of the indeclinable particles, we might mistake two nearly allied tongues for primary languages. That such a principle of variation exists in the dialects of the North-West, admits, I think, of but little doubt, more especially as we know that the names bestowed on European articles are not borrowed from the English names, and that they are different in almost every dialect. Among the Chimmesyans the name for a gimlet is a compound word, constructed from the verb "to make" and the noun signifying "a hole" or "aperture;" hence they designate that implement by a word equivalent to "borer" or "hole-maker."

Assuming the hypothesis that all dialects of the North-West are derived from the intermixture of two primary languages, we have another source of variation, inasmuch as a word compounded of two radicals may have borrowed one of them from each of the primary tongues. Not to wander into so wide a field, we will restrict our investigations to the numerals, which will afford evidence of this fact. To take a very simple illustration,—in the Kawitchen, the term for "one" is *nutso,* borrowed from the Shahaptan, while the term for "two," *saalie,* is obviously derived from the Nootkan term *attla.* There are other examples which, if less obvious, are perhaps for that reason more important. The word *moh* or *moas* is the appellation for "four" in most of the languages of the North-West. It occurs in the Billechoola of the North as well as in the Cheenook of the South, although these tribes are 1200 miles apart. But—which is far more remarkable—although this term *moh* is not the term for "four" in several of these dialects, yet in nearly all the sixteen vocabularies it occurs in compound words expressing multiples of four, as eight, twelve, twenty. The Cheenook *moas* is "four," and in the same dialect *tza-moas,* or "twice four," is "eight." In the Kalapooiah the term for "four" is *tuppeh,* but *kai-moah* is the term for "twice four." In the Chimmesyan *tuch-aal-puch* is the term for four, but we find *moas* where we should least expect it, in the compound phrase signifying "nine," which is *kusta-moas,* a compound of *kusdhou-is,* or "five," and *moas.* In the same way, although not to the same extent, words for five and its multiples may be traced through the different vocabularies. In the remote tribe of the Haeeltzuk the term for one hundred is *opun-neigh-steighs,* and we find *opun* as the expression for "ten" among the Noosdalum of Hood's Canal.

Before concluding these observations on the numerals, I cannot but notice a very remarkable peculiarity in the Indian mode of numeration, which, as far as I am aware, has not been previously noticed by any writers on the American languages. In the more polished tongues of America, as the Quichua, Araucan and Aztec, the first ten numerals are expressed by simple terms: in

the more barbarous dialects, as the Omagua, Guarani and Cochimi, the Abbate Hervas has shown that their more imperfect system of numeration is founded upon reckoning by means of the fingers, and hence among these tribes the same word expresses five and the hand. Among the Indian tribes from Queen Charlotte's Island to California, a very different system is followed, which is neither quinary nor denary, but quaternary, of which four and its multiples form the basis.

It has already been established that the simple term "four" is *moh* or *moas* in seven out of sixteen of the Indian dialects, and in most of these, where four is expressed by a different term, we find the word for four in the compound term for eight or twelve. Even in other instances, where the primary term *moas* does not occur, we find the same quaternary method to prevail, as in the following example:—

Kliketat . . 2 Neepit, 4 Pee-neepit, 8 Tzan-leepit-seemku.
Shahaptan . . 2 Leepit, 4 Pee-neepit.

The numerals on the northern parts of the coast have a very irregular appearance from the intermixture of the various tribes, but in California they become much more regular, and the quaternary system comes out more distinctly. In the following table of numerals, that which has hitherto been resting on indirect evidence becomes apparent:—

Pima . . . 4 Kiik, 8 Kikiki, that is twice four.
San Diego . . . 4 Tehapap, 8 Tehapap-Tehapap, Eight.
San Gabriel . . 2 Huehe, 4 Huatsa, 8 Huehesh-Huatsha.
Santa Barbara . 3 Massex, 4 Skumu, 12 Massex-eskumu.

In these Californian languages the term for sixteen is usually a simple word; and I am informed by Dr. Coulter that the Indians usually reckon by sixteens instead of by scores.

An examination of the words expressing simple ideas affords similar evidence of the intimate affinities which subsist among the dialects of the Indians of the N.W. Coast. Many terms are the same in languages spoken many hundred miles apart, and by tribes who are not aware of each other's existence.

The following very brief selection of names expressing simple terms and used by remote tribes, will exhibit such an affinity; and many others may be observed by comparing the vocabularies together:—

Plenty . Kai-unum, Haeeltzak; Kaach, Kawitchin; Aya, Tlaoquatch; Shooee-heildh, Chimmesyan; Shooie, Kalapooiah.
Moon . Kium-agum-at-uk, Chimmesyan; Kium, Cathlascon.
Snow . Moaks, Chimmesyan; Meaka, Shahaptan; Maaka, Squallyamish.
Sea . Tloagh, Haeeltzuk; Tow-oo, Chimmesyan; Toagh, Kliketat; Tais, Shahaptan; Steagh, Noosdalum; Kaagh, Squallyamish.

Lake . Tzalh, Billechoola; Tzalil, Cheenook.
Woman . Kootlina, Haidah; Tlootzimen, Tlaoquatch.
Child . Munna, Billechoola; Mumunna, Kawitchin; Tilcoole, Chimmesyan; Toole, Cheenook.

Other and equally decisive affinities may be traced by a more indirect process. In many instances, when the same object is distinguished by a different word in two languages, these two words may still be common to both, and we may detect their presence among the appellations of nearly related objects. The word indicating water in one language, may be found as the name for rain or a lake in another; thus, *toto-ah* signifies a star in Haeeltzuk; and *Totah* is the term for thunder in Nootkan; Tzalh, a lake in Billechoola; Tzailh, a river in Cheenook. When we examine the compound terms in the manner which has been here pursued with respect to the numerals, we find a guide by which we may trace analogies which would otherwise remain undetected; but to bring forward satisfactory instances would require a more critical knowledge of these languages than I at present possess. It appears, however, from these investigations, that the languages spoken on the N.W. Coast from the Arctic Circle to the Umpqua River, in lat. 46° N., are all intimately related to each other; and if not modifications of a single primary tongue, we cannot find any evidence of more than two distinct languages which have been mixed together in every imaginable proportion. If any confidence is to be placed in conjectures on a subject where we have nothing but philological indications to guide us, it appears probable that the migrations of the Indians of the North-Western Coast have been from N.W. to S.E., and that they have gradually made their way into the interior by following the course of rivers in their canoes, and mingling with other tribes whose language differed from theirs. It appears more likely that the maritime tribes who can travel so easily by means of their canoes should penetrate into the interior, than that the hunting tribes should invade the northern islands. The superior energy and civilisation of the northern tribes affords another presumption in favour of this opinion. The great extension of the words of the Haidah and Nootkan dialects also agrees with this supposition; for as we proceed east and southwards, these words become fewer, until in California we lose all traces of them among the natives of the southern part of that country.

The vocabularies appended to this paper were all drawn up by Mr. Tolmie, on whose accuracy I can place full reliance. The lists of words from the Indians of California were furnished to me by my friend Dr. Coulter, who resided for several years in that part of America.

Vocabularies. I. English.	Haeeltzuk. Spoken by Coast Tribes, from Lat. 50° 30′ to 53° 30′ N.	Billechoola. Spoken by a Tribe inhabiting Salmon River, Lat. 53° 30′ N.
One	Mumook	Smoah
Two	Malook	Dhilnoash
Three	Yoo-took	Ushmoash
Four	Mo-ak	Moash
Five	Ske-owk	Tzei uch
Six	Kat-lowk	Tuch aalh
Seven	Mal-thlowsk	Kul noash a num
Eight	Yoo-took-owsh	Ushmoash a num
Nine	Ma-ma-neiah	Keesh moa num
Ten	Aikas or Hailthloscun	Tshee-kil aa kit
Eleven	Munoozeo	Tippe aal
Twelve	Matageo	..
Twenty	Mashim guisteoh	Mauw li git
Thirty	Tootochshook	Ush moash li git
Fifty	Skeas-shook	Tzei uch li git
One hundred	Opun-neigh-staighs	Tshee-kil a kit li git
One thousand	..	Tzeechoo li git
How many?	Kinshook	Mas ki liks
Half	Kow-ee-oh	Un-no ki li koal
Plenty	Kay unum	Shil-luch
Scarcity	Uchunna	Tza-tzee
Sky	Loa-wah	Shoo-nooch
Clouds	Unnowie	Skee noo ash
Sun	Tlish ee oo alla	Skin nuch
Moon	Noshee	Tlooki
Stars	Toto ah	Mich mee kil
Eclipse of sun	Koochquelle Tlishe-ooalla	Nooki shilleech
Eclipse of moon	Koochquelle Noshea	..
Thunder	Shoowah	Ushaioolh
Lightning	Quch tah	..
Rain	Youkqua	Abhoo lal
Snow	Naie, or Neih	Kai
Hail	Tzil ach peesh	Dlich o ash um
Ice	Tlaagh	Skil
Water	Ooamp	Kull ah
Lake	Kanwish	Tzalh
Sea	Tim eichs	Shish
Mountain	Ko quish	Shinedh
Meadow	Keetum ish	Slaash
Sea-beach	Weel eagh	Ka ook
Inland	At leach	At lesteach
Harbour	Thlimalla	E mae stak

Chimmesyan. Spoken by Coast Tribes, from Lat. 53° 30′ to 55° 30′ N.	Haidah. Spoken by all the Tribes of Queen Charlotte's Isles.	Tûn Ghaase. Spoken from Lat. 55° 30′ to 60° N.
Kaak	Squansung	
Tupchaat	Stung	
Qundh	Klugh unnil	
Tuch-aal-puch	Stunsang	
Kus dhoou is	Koheil	
Coaldh	Kloon il	
Tupch-oaldh	Tsunqua	
Kundh	Stansungha	
Kusta moas	Klaso kensinoh	
Kippio	Klauhl	
Ti kaak	Sukwa so nug	
Ti lupchaat		
Coopte Kippio	Lukwastung	
Quil-le-it	Lukwastung Khlane	
Kush dhoonis kippio	Lukwa thleilh	
Tup-cha-dooli git-ik	Luckwa-so-ang	
Cupvaldh		
Tim maigh	Kieslow	
Kuk sheu lik	E no why	
Sho wee heildh	Quan ewan	
Sha boolh	Simmoan	
Such ah	Shing	
Hook uts un	Yen	
Kium uk	Shandlain	
Kium ugum aat uk	Khoough	
Pialust	Kaaldha	
Tzeen de kiumuk	Kaietloa shandlain	
Tzeen de kiumugumaat	Kaietloa khong	
Killa pilleip	Ee ee lungh	
Tzum leich	Sheta hal ta	
Waash	Tull	
Moaks	Dhanw	
Tza tza	Katulung	
Tow oo	Kull lik	
Use	Huntle	
Tsumdhah	Shoo	
Moan luchmoan	Tungha	
Skunneesdh	Khildhan	
Luch kioaght	Kluggitah	
Kee ugh	Uchan	
Nat kil how lie	De dah	
Unde-he-pa-lek	Howah	

1. English.	Haeeltzuk.	Billechoola.
Village	Gook-quilla	Shoolh
House,	Gook-qua	Shmool
Door	Klipum	Mum ood ota
Canoe	Kilwa Shawatch	Chla lust
Paddle	Cowma	Atctah
Mat	Thlee wah	Stuchoom
Kettle	Nuccum	..
Gun	Keen ta ga	Tee kad da
Gunpowder	Ta eegh	Schoom clah
Shot	Tza tzai ayo	Hool pe ke tah
Flint	Kee peelh pah	Al ke meem
Bow	Til queesh	Poots tun
Arrows	Hunthlum	Tit nin dah
Dagger	Hooch taio	Alko nagh sim
Knife	Uchainum	Teech tah
Hat	Kay cete	Kay cete
Coat or capot	Taa taa soh	No ap
Vest	Ky kagh sheap-ah	Pepile qualist
Trowsers	Wun kys da	Sha ka cummachail
Handkerchief	La lach nio	Quagh qua nil
Shirt	Coo a boo	Coo a boo
Cedar-bark blanket	Ko tigh	Tzummi
Tobacco	Tlanka	Tlank
Red-deer	Alla gim	Skee mah
Roe-buck	Ka meilah	Shoopanie
Beaver	Couloun	Couloun
Land-otter	Quellah	Neekach
Sea-otter	Ca shaa	Qunnee
Marten	Mishtli Kun	Uchy chy
Black bear	Tlah	Tlah
Grizzly bear	Nun	Nun
Dog	Watz	Watz
Whale	Qayum	Kiush
Salmon	Soumah meah	Shimilk
Halibut	Poe	Poe
Herring	Wan aic	Til kil
Birds	Tzeco, Tzutzequiach	T see tze pei
Fat	Tlaash	Huelusk
Lean	Caagiwa	Uchyth
Rich	Keadh	Goosh Klulk
Poor	Kee adh	Shiniwod
Heavy	Queeook	Tshko
Light	Qush	Wha whee
Strong	Ghlowk	Til
Weak	Wytle mush	Timsk
High	Kil tucht	Tshilko

Chimmesyan.	Haidah.	Tun Ghaase.
Wul dzooh um	Lanashoola	
Awaalip	Natee	
Kum ghum	Skus Keedoh	
Paal, Uchusho Nohwio	Kloo	
Waigh	Ul	
Shchun	Legoose	
Comilh, hiluawish	Hunnah	
Kopilloh	To ut	
Ommalek	Os il tah	
Loap	Chiket lo he	
Kumdt	Ko ke gong	
Hacootuk	Klahilt	
Hawaulh	Tzin til lin	
Toatsk	Yeidz	
Ilth-a-peesh	Yeidz	
Kai dum tzalip	Tadgung	
Ko datzo	Kodatz	Kodatz
Wugh ka no andh	Skoostao	Wil tzin ch
Ka puchs	Qun	Qun
Con cum tum loanie	Cun te ga	Shee da da
Cush leushk	Kodatz khadli	Kad ani Kodatz
Na wushk	Ligh augle	Tloo it
Wir doam gum she wa	Quil	Kuntsh
Sthlioane	Tchisk	Tchisko
Wun	Kawt	Kogan
Sktzoalh	Tzing	Segede
Watza	Stlug	Coostah
Istiploane	Nuck	Youchtz
Yeunni	Coo	Coogh
Olh	Tan	Tseck
Mudeak	Hootch	Hootch
Haas	Ha	Ucha
Til poane	Qun	Yio agh
Hone kustamoane	Swaggan	Ka at
Tuch an	Chuk	Chaatil
Tska	Clang	Noagh
Tzots	Hutcet	Koch
Wei tok		
Kawhle		
Haughk		
Wa la waal		
Its teen		
Eligh pun		
Kat kid		
Yui git		
Wee y nug		

I. English.	Haeeltzuk.	Billechoola.
Low	Tzuk wught	Ky koo teh
Long	Wahtzo	Pee ky kut
Short	Tzeca	Ky koo teh
Round	Wah keet	Koom
Man	Poo quanum	Tlimsdah
Male	Weishum	..
Woman	Kunnum	Chinash
Child	Shashum	Munna
Children	Shushumach	Munnamuns
Old man	Nomash	Tshil quillee
Old woman	Til qua nie	Chitil quile tzaich
Chief	Eemash	Tal to mich
Slave	Kaghkoh	Shnaanch
Tree	Tlaosh	Ushtin
Cedar	Quaghtlan	Teechtuk
Grass	Kiet tum	Shaosh
Sand	Skeeish	Skats
Stone	Teissum	Quils tolomick
Owl	Teich teich einnie	Teich leich cinie
Surf-duck	Cooteenah	Ah quah
Day	Quakilla	Skoonook
Now	Athlum	Waighewa
Yesterday	Klan cheh	Kainooch
To-morrow	Klan slatch	Ee kaimooch
Long ago	La Kaiala	Aeek
Winter	Tso unnock	Shooteek
Spring	Quagh unnock	Popo shimmi
Autumn	Mea gila qualish	Noo shimmilk
Summer	Haiy nuck	Awmilk
[1]I, [2]Thou	[1]Nookwa, [2]Cusho	[1]Untsh, [2]Eno
[1]Mine, [2]Thine	[1]Nesho, [2]Cusho	[1]Untshil
[1]We, [2]Ye	[1]Nookwintok, [2]Kycusko	Unshto[1], Enooh[2]
He[1], They[2]	[1]Caigh qua, [2]Elee caigh qua	[1]Teechtil taigh, [2]Teech til tin no mo taigh
Good	Ske	Teeah
Bad	Yuck	Ushēē
Valuable	Thk'weinie	Nooskaam dats
Valueless	Pitzeeneh	Achko nool qui ki meeds
Large	Keykash	Hailko
Small	Howlal	Ky koo tie
Upwards	Skeagh (Xkeagh ?)	Tloaki
Downwards	Wunkaiagh	Kumm
Sleepy	Peck Kotzeh	Yul a Ritz
Hungry	Poo eesh	Huch tlalts

Chimmesyan.	Haidah.	Tun Ghaase.
Dil puch		
Wee tuchoa		
Til til coat weh		
Til kc kawsh		
Tzib	Kleil hats ta	Kah
Youcht		
Unaach	Tsa ta	Shewat
Tilcoole	Kiddilung	Toosee
Tilcoolteet		
Hoolakielim youcht	Til ky ah	Shoan
Hootakielim unnaach	Kootlena	Stooshit
Smo ik it	Eet la kit	Uncan
Ŭchăck	Haldung	Kooch
Kunaghun	Kyet	Oush
Kullan	Kydlah	Tzak
Ki o acht	Kyia	Tau
Owsh	Il kaik	Hatza
Loap	Tlaha	Ta
Qut qun ceoks	Koot qun ceooks	Qut qun ceoks
Umgaiac	Sking	Kadlahi
Tseichoosah	Koondlain	Tsoolatik
Keaun (Klaun?)	Hyeet	Eedit
Kit cheep	A tulh taish	
Chik a cheep	A tulh	
Kee koalkh	Awatilk	Tsawk
Koam shun	Shungha	Koolaan tawk
Lugha lughumsh (Sugha?)		
Lugh hone (Sugh?)		
Shoondhee	Klineet	Kootaan
[1]Newyo, [2]Noone	[1]Teca, [2]Tungha	[1]Ushut, [2]Aith
[1]Nawhawac		
[1]Neuhami, [2]Neumi		
[1]Qua, [2]Queet	[1]Watsqua	[1]Yout
Aam	Saggan	Ahkeh
Atuchk	Cum laangan	Tzilthlis-keh
Toachilh	Quyagun	Kleik
Ka de toachilh	Cum Quyagun	Klaik ilkatzen
Wee leise (leix?)	You wan	Ahklein
Tzoushk	Skimmon	Kleik ahklein
Wut lugh-aga	Klit au	Sha klein
Tluchum	Hyeet	Tuchei
Klugh shuki dum	Til ka koouzah	Talhit such
Cooteeg-hot	Qutt	Chun in (ui?) o ha

II. English.	Kliketat. Spoken in the Tract between Ft. Nez Percés, Mount Rainier, and the Columbia Falls.	Shahaptan, or Nez Percés.	Okanagan. Spoken on Fraser's River.
One	Nuchs	Naks	Nuks
Two	Neepit	Lepeit	Uskul
Three	Inetaat	Inetaat	Kaal thleis
Four	Pee neepit	Pee tlipit	Moas
Five	Puchaat	Paachat	Tcheilixt
Six	Tuchneens	Weilakits	A kumet
Seven	Toos caase	Wee napit	Sheespil
Eight	Tzanleepit seemka	Wee snittaat	Tzimil
Nine	Tzanluchs	Queetz	Tchuchun noot
Ten	Poatummit	Poatumit	Opuniet
Eleven	Poatummit kooluchs	..	..
Twelve	Poatummit leepit	..	..
Twenty	Neipteet	..	..
Fifty	Pucha apteet	..	..
Hundred	Pola apteet	Pota apteet	Schuch tzivet
How many?	Milh	Mitz	Loat
Half	Walluk	Kee um	Scōat
Plenty	Uchillak	Eluchunie	Whepteit
Scarcity	Miltah	Meelutz	Ta kaka thleiss
Sky	Tochwun	A ee cut	Sko eos sin
Clouds	Showntash	Epe leckut	Spotlint
Sun	Aun	Ek sim tooks	Chai al thlinoh
Moon	Uchych	Chikaopa tooks	..
Stars	Chasloh	Tchet tzyo	Hoho oos
Thunder	Sa weenalthla	Henemeisah	Stzuketz kaap
Lightning	Eh tee	Hete kusyochos	So-oh-ek keis
Rain	Toch tocha	Wea kyt	Te pais
Snow	Pooie	Meaka	Sma koot
Hail	Tam que quee	Taimolh	Tzi tzi shil-loo-hint
Ice	To a gh	Taiss	Schoanuk
Water	Tchowush	Koose	Sauwulh
River	Wannah	Peicoon	Utz la hap
Lake	Wattam	Eweitum	Ecoot
Mountain	Pannateet	..	Atz im mok
Plain	Taak	Taakin	Hoochsooluch
Island	Ema wee	Ah mah	Atz te kum aks
Village	Uchillak needh	Elch weetza	Whe eit-breet
House	Needh	Eneedh	Nukko
Door	Wispas	Piskis	Sen atsis kat in

Kalapooiah. Spoken on the Wallamat Plains.	Yamkallie. Spoken near the Sources of River Wallamat.	Umpqua. Spoken on River Umpqua.
Wa	Wan	Aylh thla
Ka im	Kee a ma	Nak kyk
Oapsha	Hophie	Taak
Taapheh	Taappa	San chee
Oa wan	Oawanna	Ish wheilap
Taaf	Utafo	Whastaänie
Sheeni-moah	Ohopshie	Whey tye
Kai moah	Wach keeamoh	Naka tie
Ohshien teinifeh	Wacho ainoh	Eil thlantie
Teinifeh	A teishwa	Whunneya
Waam teinefa	Atashwa wana	Aytthla yatta
..	..	Tai yatta
Kaim te teinifeh	Keamie tum weiska	Tinche
Cowante teinifeh	Waunwho	Ishwhai
Teinifeh teinifeh	Teishuffoh	Whulthanic
Aho alhoh	Pow lano eioh	Taagh attie (athe?)
Kho peefah	Olopa hal	Owungh
Shooie	Mulh eewie	Whalh an
Wa ha	Poshnag	Yo at leitha
A meeak	Wee opuk anie	Ya amee
Onoopuk	Khunk ta	Eesh teugh uk
Umpean	Khumpeuna	Hoa tle
Ah thoap	Khuma tohpie	Ee walh tchee
Ah to eenunk	Quatso wunk	Halk at chee
Ah ump equeh	Kampequa	Eet in eh
Tcheil toa ai	Ma ala poh ait	Nin g eil kush
Koon queet	Mulia aala	Nalh eik
Anoopeik	Kano paik	Unloshie (Untoshie?)
A tai oh	Khan tah	Untoshie men chowa
An deiss	Khan teiceh	Tahoh untley whe
Mampukka	Khamp kea	Tuhoh
Am hooie oh	Qualass kumkey	Uchun aitcha
Mampuchailheh	Kaloh loa	Shachaltoh
Amel foh	Kum uf foh	Nuntza
Apeēpalh	Qualhoyo	..
Kampoch poa	Mampailh	Shachaltom
Shooie hummie	Mooleewee kungha	Ma maa sanie
Hummie	Kulhla	Măh
Akow atchum	Kunka waspa	Tunweh

II. English.	Kliketat.	Shahaptan.	Okanagan.
Canoe	Wassas	Leh is	Slalthleim
Paddle	Uchywas	Wee sal poas	Oat sil tin
Mat	Eel qua teet	Tookko	Swyaks
Bow	Ta wee to wanie	Timoon	Tsuk que nuk
Arrows	Kay assoh	Tsaise	Tsuk keilun
Dagger	Uch a pil'chlinnie	Tek ek ykas	Huch tuch teh
Spear	Tanno techye	Tekek y kas	Tloomeen
Iron	Tooks	Kisweh	Olo leeim
Axe	Kystin	Wow weans	Ka wis ka
House	Coossic	Sheekam	Se ne kil tza skucha
Red deer	Ameenadlh	Wow wow keap	Papalatz
Roebuck	Tchato cellee	Tata palh	Klatz eenim
Beaver	Eechah or Wees-poos	Tuchs polh	Stoonieh
Black bear	Anahni	Yaakah	Skumma chist
Wolf	Uchalleis	Heimeh	Nu tze tzim
Dog	Coossi coossi	Skaamkulh	Ka wappa
Salmon	Mitolla nosagh	Notsoagh	Unte teigh
Birds	Kakeeah	..	Spuka meigh
Fat	Tuschan	Tusch	Hooch teilh
Lean	Kyeoo'	Weesh-eh (wush?)	Atzi thle eip
Rich	..	Kaivee-is	Wha lis-tzoot
Poor	..	Heh-wit	Ya-yaat
Heavy	..	Tzou-enis	Noit
Light	Po-ach	Heitzawitz	Epe-oo
Strong	Huch-tuto	Kups kups	Kotsh qualtz
Weak	Kilkapule	Elaat	Schoop
High	..	Koohet	No weiss
Low	..	Kahattoh	Eh-hoot-ta
Long	..	Koohett	Weis chun
Short	..	Kahattoh	Tak ok
Round	Tipeit	Teepit teepit	Meilok wa
Man	Weens	..	Skullum eechw
Woman	Ayut	..	Tukul thlimei-looch
Child	Mee unnalh	..	..
Boy	Aswan	..	..
Girl	Pitee neex	..	..
Son	Eesht	..	..
Daughter	Pap	..	..
Brother	Sehup	..	..
Sister	Atz	..	..
Father	Pitsha	..	..
Mother	Pishit	..	..
Old man	Hooeksad	..	..

Kalapooiah.	Yamkallie.	Umpqua.
Ahm pow	Kampow	Tchee
Shuk kowt	Mentza toom	Meitoh
Haish ai	Feh weyook ausai	Mutsch
Aposkèh	Kampooshka	Ulh neh
Anoak	Kanooqua	Ta neo wit lin
Akinustah	Koomai oo qua	Wa shea mane
Ak-kallah	Kamfeasulh (feusulh ?)	..
Asqua fout	Kantaala	Natlimie
As kys taan	Kansa salh	Skeinil
Akeeowtam	Keowtan	Thlin-til-kaitch
..	..	En aa kalh
..	..	En tcheh
A keipch	Kuma keipch	Ushah
Wa moi eim	Kaneh wita	Steilsha
Nonit leint	Kamalein	Ein ta tame
Mattaal	Kantaala	Thleh
..	Kampeich	..
..	..	..
Sooi tompeah	Kumkeah	Qua whalh-ah
Waa tompeah	Moochai	Ta-qua-whimtil
Sooi-to-uka	Mul ewa akuk	Uchus cheh
Waa-to-uka	Weh akuk	To-ta whuntil (whim ?)
Koomkit	Mukkye	Meintaya
Shimadillo	Mookalap	Tatuk
Ta-luch-tokko	Mita kootcheh	Tla neish
Waa-luch-takko	Mohlok	Toi ilheish
Tom-pass	Moppohtch	Neis
Tootzkeigh	Ulskoolsko	Schy e halka (heil ?)
Komposs	Tmaalugh	Meen einch
Leeuktchis (Seenk ?	..	Shto atleitleh
Wa po kotch	Unta millawch	Tchow-ulh
Halum han	Posh kahoo	Tee tza
Apoommeik	Ah-weh-quattic	Eichee
Tooapeh	Ketawai	Teets ech eitte
Alchakoaleik	Kaynee wastch	Un gai alluk
Whuleok	Kampuna (pee ?)	Eit eh
Wa yu hay	Kithowac (wai ?)	Shaskehaia
Opomeik (Apo ?)	Ta penea	Eit atla (atta ?)
Shoat	Yet apai	Heit leitla (leitta ?)
Sleitch	Ta-yit-a-polh	Steitcha
Effam	Tahāma	Stangteh
Ennim	Kit ancit	Ungteh
Wa yuhay	Kanchaha	Ulchaioh

II. English.	Kliketat.	Shahaptan.	Okanagan.
Tall man	Tuck shan weens	Hooket teellokun	Le qulok
Hunter	Tochnathla	Happatus	Skullum ecchio
Warrior	Patee-weelthlam	Hawahush	Uncus scilis
Fisherman	Wycanash nam	Lanhap tush	Thlothlo molh
Thief	Pach weelham	Pachowia	Naqua molh
Berries	Wewunno attect	Tee maanit	Sheah
Sick	Pyo	Ecoomye	Ulz-sky-eilth
Well	Sheeuch	Tautz	Chaast
Good	Sheuch	Tautz	Chaast
Bad	Chylooeet	Kapscis	Kaast
Happy	Sheuch tinna	Eitz	Chaast spoosts
Sorry	Sheh wat	Teemina heurtza	Klaaks-klili-meechwach
I	Enuk	..	..
You	Emuk	..	..
He	Yukè or peimik	..	..
We	Na mak	..	..
Ye	Eee maak	..	..
They	Pamnak	..	..
Come	Weenum	..	..
Go	Weenuk	..	..
To speak	Sinmee sa	..	..
Run	Wa yach te	..	..
Bring	Nusweemum	..	..
Take away	Ween puttah	..	..
Now	Ekoak	..	..
Long ago	Meewee	..	..
By-and-bye	Ech wee	..	..
Here	Eetchee	..	..
There	Equa or eecoanie	..	..
What are you doing	Toon ama keogh ana	Eh toh ha neisa	Sleem kol intoch
What are you saying	Toon sin wee sa	Meis heitza	Slaam qula quielt
Where is it	Minan a luchu-mata	Meina hey	Amoat tuch
Let me see it	Sho wa ky no ah	Ke why a kakeh	Hooch atsint

Kalapooiah.	Yamkallie.	Umpqua.
Whapoos	Apostch	Teitza neunk
Wai yookne	Kanyoh wallaak	Eetla gheh
Wa tzie eyuk	Witzyawie	Thlighanti teilthla
..	Oopasilocca	Thlughi an tata
Walatzoh	Kaya latchko	Uchailea
Akyeah	Kanta kolo	Tchetcheh
Wacil fatteh	Oashwai	Teenchak
Pe tanneh	Koshoh	Wascheh
Wa tennah	Moshoh	Whalcheh
Uchaskeh	Ukalchka	Munch whuneh
Walena timopeh	..	Tche wuscheh
Uch[illegible]skeh	Mossho	Tehe unchwha
..	..	Shee iya
..	..	Noo iyeh
..	..	Hah tadzi
..	..	Nee yoh
..	..	Nohnee
..	..	Ach eeya
..	..	Yuk qua
..	..	Nah tailh
..	..	Whaatie
..	..	Heen goak
..	..	Yaqua eenhah
..	..	Nah alh
..	..	Hoh
..	..	Tee ah
..	..	Ah-toh
..	..	..
..	..	..
Akumanseh me winah	Akansopoet	Tai te lalh thle
Akumanseh anishi	Akanse yewa	Ta chintch
Halla tip eint	Aman peyoh	Ta hautasta (han ?)
Enatzitzipotot	Kah hohtoh	Neghushoh

III. English.	Kawitchen. Spoken at the entrance of Trading River, opposite Vancouver's Island.	Tlaoquatch. South-west extremity of Vancouver's Island.	Noosdalum. Hood's Canal.
One	Nitsa	Tzank	Nitsa
Two	Ece saalis	Attla	Tchissa
Three	Thleuch	Kutz tza	Thleuch
Four	Uchaasin	Moh	Moass
Five	Tilkatchis	Soocha	Tilkatchis
Six	Tuchūm	Nōopoh	Tuchūn
Seven	Tzauks	Atlepoh	Tzoaks
Eight	Tukatcha	Attlukwilh	Tukatcha
Nine	Toach	Tzawak quilh	Toach
Ten	Appun	Haioha	Opun
Eleven	Appun ie ta nitza	Tzawi mil apo	Opun ta nitza
Twelve	..	Attli	..
Twenty	Isqueelh	Attleik	..
Fifty	Utch lukitz tilcha	Soolcheik	..
Hundred	Nutzo witch	Haioyak	..
How many?	Quien	Oonăh	Quien
Half	Iltoko	Katowat	Tilkun
Plenty	Kaach	Ayăh	Ungh ungh
Scarcity	Umei mun	Wik Ayăh	Tloatla
Sky	Tchooch as tun	Naase	..
Clouds	Sko teech un	Kotlo puck	..
Sun	Shee a com	Tlopil	Kokweh
Moon	Tjlkantza	Hopulh	Tilkaitza
Stars	Quassin	Tastass	Quassin
Thunder	Itzh who whaas	Totah	Atz a quilh
Lightning	Sukin chinnum	Tle an eish	Tchato chaquilh
Rain	..	Meetlah	Slimmooch
Snow	Maaka	Katzomin	Maaka
Hail	Squilmaloh	Queiss	Tzei teimisha
Ice	Speioh	Koagh	Steiogh
Water	Kah	Tchaak	Kah
River	Staaloh	Aook	Stowie
Lake	Seich	Owees	Motochoss
Mountain	Uche chilh	Notcheh	..
Plain	Ey timmoch	Kleesmaak	Spilchun
Coastwise	Ucheitzo	Eetzato	Aatso quilh
Island	Tilchas	We ta quis	Ske kootsas
Village	Kuch tala lims	Ma a us	Nungh tai lins
House	Tzo togh	Maas	Otogh
Door	Stchalh (Itchalh?)	Moosh uss um	Solh
Canoe	Snughwilh	Tchappits	Otuchs
Paddle	Skummilh	Oowhapic	Houghit
Mat	Slawun	Thle hulh	Tzinagh
Musket	Shiquillah	Poyuk	Ytsh

Squallyamish. Puget's Sound.	Cheenook. Entrance of Columbia River.	Cathlascon. (Catlascou?) On the banks of Columbia River, from the lower falls to Cheenook.
Nutso	Slukweek (meek?)	Eecht
Saalie	Saalie	Moxt
Thleuch	Tchalh	Thlune
Moass	Moas	Sakit
Tzĭlătch	Tzeilutche	Quinum
Tzĭlălthic	Seytutch	Tuchum
Whull	Tzoaps	Sunnamoxt
Whullie	Tza moas	Kzoughti kui
Whul a wo nutzo	Towk woh	Quecoos
Pa[illegible]tch	Paa mitch	Stathleilum
Paa natch ta nitso	Tal pow	Stathleilum qun eecht
..	Tal sal	Stathleilum moxt
Saalie atchie	Tzim to mish (lo?)	Moxt stathleilum
..	Tzeil itch	Quennum te kal
Panatch	Paa a natch	Taka moonak
Quiet	Ato eisha	Kuncheich
Eltuckioo	Loathlh	Sheiti coom
Kah	..	Til kaapilla
Mēē mah	Was ho a atz	Til ka wata ki teeks
Skolh qudoch	Skaatle	Ekoshach
Skeech tchamko	Kla qush	Tikka
Thlok wahl	Squillis	Kulthlach
Slokwalum	Tunneim	Kai um
Tchoossah	Shwaok	Tukycha napucha
Whe quaddie	Chan hansowun	
Sposaadie	Shtche tchis tuk	
Skullum	Stohlis	Ste ti keiltch
Maako	Slaako	Stzikkat
Tlim wheila	Tleigh ulluks	Atzo kitso
Skaghwo	Stchow	
Koh	Nawilh	Stchuqua
Stolak	Tzailh	Emalh
Shich thlip or tzalal	Tza lil	Ethlala
Squatache	Mantch	Ka kam
Maquam	Maa coom	Tum kaima
Tchaak	Mowtch	Mal lhemi (chemi?)
Slit chch	Spoa teitch	Ragh eituk
Kata aalal	Kuggil tachas	Toquilthleinach (lauach?)
Aalal	Kaas	Taima
Kust	Tukeinpist	Kuppotat
Tillai	Weilh	Cunaim
Hoopit	Quaapie	Eeskie
Kooquats al	Swyssak	Thlilquatic
Whullamalis	Powhelha	Shukquallalla

III. English.	Kawitchen.	Tlaoquatch.	Noosdalum.
Bow	Toch atz	Moas talil	Scho mo tun
Arrow	Smuk unsh	Tze hattie	Tzimaan, Ylsh
Dagger	Thlaatz tin	Tzok quaeek	..
Horse	Stike oo	..	Mantlin
Iron	Halai tin	Eses atchit	Halaitan
Red deer	Ky eitz	Tloo nimma	Qua wa itz
Roebuck	Tla ket inna	Mowitch	Hoapit
Beaver	Skullauw	Atoh	Skyauw
Wolf	..	Quay utz cek	Stee kaio
Dog	Sco mai	Yneistle	Skacha
Fat	Neil	Klaatz eh	Mitz
Lean	Izh tzitikash	Kle hakshitle	Ush cumocks
Rich	Kuch	Ay yaish	..
Poor	Uhhitish	Weekeit	Uchum
Heavy	..	Qua tee eek	..
Light	Wha wha	Katee eikishis	Wha wha
Strong	Eyum	Yche ha	Komokom
Weak	Wummaan	Weh ak	Til cheiks
High	Kluk tamiz	Yaak	Klukitaalh
Low	Tzei tlam	Aan a is	Tzatza tilh
Long	Klaa kit	Yaak	..
Short	Tki thlip	..	Untzut lalh
Tall man	Neilh	Ehā es kowus	Tchuck
Hunter	Nooz sho wawa	Wagh tih estle tleia	Noos chikuyu
Warrior	Schai lil sit	Tche aka	Sin angis
Fisherman	Noocks chachiltin	Aiyunnik	Noochs chaalooh
Thief	Kun kun	Ko wilh	Noos caada
Berries	Leila	Koweh	Tzil tin ung
Sick	Ka kye	Ta ilh	Chaalh
Well	Ewit sy na mit	Te chi chitl	Ey
Good	Ey a amich	Tloolcish	Aiye
Bad	Kull	Peishakeis	Usch as
Happy	Noo why wilh	Tloolcish thlcimakste	Nowhye equn
Sorry	Nooch kull	Peeshats	Nooschus
Man	Shweika	Chukoop	Sohwie ken
Woman	Islanie	Tlootsi min	Shee akatso
Child	Numunna	Tannais	..
Boy	..	Maetle-kutz	Tle tla, kli kelh
Girl	Thlinalh	Ha gua til	Islanie
Son	Niswa numunan	Maetle Kutz	Nisqua nungung unungha
Daughter	Islanie finimil	Haguatle sooks	Stimsh na chichil
Brother	Kaak	Yooqua	Nisaitzh
Sister	Kaak stainai	Yooquckso	Aitch
Father	Onman	Nowwall	Outzit (Intzit?)

Squallyamish.	Cheenook.	Cathlascon. (Cathlascou?)
Huchs tza tzots	Stek quethin	Thla ghein
Tessun	Quittaiks	Tukaamatch
Snoak	Wheil ha	Ky wekkce
Slekke oo (Stck?)	Stik keoo	Keoutan
Kum nut tin	Tla ai chepita	Kystin
Mey itz	Keil it	Molak
Skeig watz	Pakoosc	Eh laalak
Stuk ouch	Stummah	Kanook
Ste kaio	. .	Leh cumoh
Sko mai	Tleitz amilh	Koot koot
U whus	Keuch	Il katza
Is tloh	Yeutlil	Il yeutluch tau
Katis etamis	Kuch alh	
. .	Shakitlin	Tanee la ki ti
. .	Tol koiok	
Whee wha wha	Whaat	Sy quan quan
. .	Nepy tamis	
Ka kal	Aio whak	Teal ae kauw
Haatz	Toashil	Yaa til kit
Ka kuch oh	Was to milh	Yaa cheh kukit
. .	Toashil	Ya kil kit
Ka ko	Lowilow	Sowilow
Hequo atsecttam	Toashil	Ya toomit
Noos stot saddic	Te whuna	Ya ke ma quan
Noos seeaam eko	Uchushaash	Yuch ma kau
Stolaquamish	Tla aapish	Yach e te kalla
Noos caada	Ekoo lakāh	Ya eoo leem
Squnalthla	Uchcilum	Tukeemach
Uchulh	Yeitz uch	Yatzq mum
Haalh	Keis tun yetzuk	Kat ty ya
Kloom	Tlaqu	Tooktee
Kullum	Uchushaws	Ya ka mil
Haalh ke hutch	Tlooa squillum	Toohlee yamux
Kullum	Hushaas	Ya kamil
Stobsh	. .	Eel kalla
Islanie	Ky kit thlin	Ka kei lak
Dubud dubudda	Haak	Til kas kas
Slo slobsh chachis	Tool	Ekas
Islanie chatchus	Thlan	A kas kas
Tibuda squa	Kut toon	Chichan
Tibuda izlanai	Que milh	Ah kan
Tzoquats	Tinniets	Tzoch eech
Tzoquats islanai	Tip sheinvis	Kootich eich
Tadu baad	Kucht	Wee aam

III. English.	Kawitchen.	Tlaoquatch.	Noosdalum.
Mother	Intann	Ooma a	Intan
Old Man	Shea loocha	Fitsim	Kichaycik
I	Nishwa	Seea	Utz
You	Tinnawa	..	Tinnuk
He	Kwas	Sowa	Squas
We	Til neimit	Atchuk	Til ninghilh
Ye	Til willup	Newah	Saalin queya
They	Tissaalye	Sewah	..
Come	Meil thla	Tchooqua	Unna
Go	Namil thla	Tcha al che	Heeaatzin
To speak	Qua quill	A-u koak	Qua quea
Run	Whinsheinum	Kumit kok	Kou ang ut (aug?)
Bring	..	..	..
Take away	..	..	..
Now	Hy sil	Tla howieh	Hyaatche
Long ago	Weilh ess	Oakowie	Quilh citz
By and bye	Hoo alh thla	..	Qua qua tach
Here	Sa ha lool	Yalh e illeh	Tilh a a
There	"Sin-a-a-ool	Eil thlei althlei	Ti whin aol
What are you doing?	Staam koos ya itz	Akuts ka mamook	Astongh it itsigh
What are you saying?	Staam kis is qua qualh	A-u-koakwawa	Ah-eint itz
Where is it?	Mitz chinscha-koons unmit	Waas e he	Toch-low hi ntz ka umadin
Let me see it	Heil nam chin quatchit	Nananitch	Hoecsta quintat-zin
What is your name?	Waid to koods-queek	Achnekit luk	Tzatchiosnah

IV. English.	Pima.	San Diego.	San Juan Capistrano.
One	Hemăko	Siha	Supuhe
Two	Kook	Xahuac	Huah
Three	Beĭk	Xamoc	Pahai
Four	Kiĭk	Tchapap	Huasah
Five	Xĕxtaspe	Xetlacai	Maharr
Six	Tchŭtep	Xentchapai	Pŏmkălĭllŏh
Seven	Bŭbăk	..	Ehueohui
Eight	Kikikĕ	Tchapap-tchapap	Huăsăkăbiă

Squallyamish.	Cheenook.	Cathlascon, or Cathlascou.
Skoie	Ku	Ko
Solotle	Hoh	Keokit
Utza	Untzh	Nika
Dugwee	..	
Ta tocli neil (tocli?)	Now	Mika
Neimalh	Yuchka	Yuchka
Qualaapok	Eneem	Nutika (*dual*), nuseka (*plural*)
Ke malh	..	Mutika (*dual*), misika (*plural*)
Attlah	Essah	Mitteh
Agh	Wankehat	Kulch owéa
Chotochot	Tukkolthla	Muktim
Tillammeel (lanmeel?)	Shuchwam	Melch ewitz
..	..	
..	..	
..	..	Aka
..	Enätzie	Ankatie
..	Howshanum	
..	Sheilteh	
..	Shaanilt	
Staam koo wheeh to chagh	Eleia malh	Taan mee o holla
Staam koo chotochot	Taam to koilh	Kun ke mo holla
..	Tchaanil	Kachpa keetan
..	Tla kin che	Nee ook sta
..	Too we sheax	

San Gabriel.	Santa Barbara.	San Luis Obispo.	Sant Antonio.
Puku	Paka	Tshxumu	Kitol
Huehe	Shkoho	Eshiu	Kakishe
Pai	Masex	Misha	Klap'hai
Huatsa	Skumu	Paksi	Kisha
Maharr	Yiti-paka	Tiyehui	Ultraoh
Patahi	Yiti-shkome	Ksuhuasya	Paianel
Huatsakabea	Yiti-masex	Kshuamishe	T'eh
Huehesh-huatza	Malahua	Sh'komo	Shaanel

IV. English.	Pima.	San Diego.	San Juan Capistrano.
Nine	Humukt	Sihntchahoi	Huasa-yvicohiall -maharr
Ten	Huistemām	Ñamat	Hui-keen-ma-harr
Eleven	Māātŏ	Sihn-noxap	..
Twelve	Kŏŏnk	..	..
Thirteen	..	..	..
Fourteen	..	..	..
Fifteen	..	..	..
Sixteen	..	..	..
Twenty	..	..	..
Sun	Tash	Ñā	Tēmet
Moon	Maskat	Iătllā	Mioīl
Star	..	Xllepxuatai	Shul
Earth	..	Mat	Ēxel
Water	Shōñtik	Xā	Pal
Sky	..	..	..
Sea	Kakatchck	Xāsilk	Moomt
River	Ākĕmŭli	Xā	Huani
Lake	Vō	Xā-quatai	Pal-mokat
Salt	Ōnă	Ĕsii	Ēngĕl
Light	Tai	..	Kūt
Day	Tashimĕt	Na	Nàànŭk
Night	Stuŭkum	Cŏjoñ	Tuceñga
Cold	Seapit	Xetchur	Shōbōbŭt
Hot	Stōn	..	Xalek
Stone	Jōtē	Ehuei	Tōōt
Mountain	Tòàk	Mai	Ka-hui
White	Stoxa	Umshap	Huaiyaxnut
Black	..	Nillh	Yūbātexanut
House	Nihki	Ăhuā	Kēcha
Door	Pūālīt	Huaā	Pūpūk
Bow	Ñikāt	Atimm	Kūtăpsh
Arrow	Napot	Copel	Ūl
Body	Nionh	Ĕmal	Pĕtāxo
Chief	Capit	Cuaipai	Nōl
Man	Tiuot	Ĕpatch	Yei
Boy	Āndī	Jacuel	Amaigomal
Woman	Ūbă	Seen	Shūngāl

San Gabriel.	Santa Barbara.	San Luis Obispo.	San Antonio.
Maher-kabea	Spa	Shumotchi-maxe	Tetatsoi
Hushesh-mahev	Keshko	Tuyimili	Tsoeh
..	Keilu	Tihuapa	Tsosoktolh
..	Masex-eskumu	Takotia	Lapaiksha
..	Kel-paka	Huakshumu	Lapaiksha trex-tol
..	Kel-ishko	Huaklesiu	Huoshosho
..	Kel-masex	Huaklmishe	Lapai-ultraŭ
..	Peta	Peusi	K'pesh
..	..	..	Kakisho-tsoeh
Taamet	Alishaxua	S'maps	Nnah
Mūărr	Aguai	Tabua	Tatsoopai
Shosho-huoot	Akehuu	K'shishimu	Tatch-huanillh'
Ūngxŭr	Iti-kiala-kaipi	..	Lac
Pāără	Oh	To	Tcha
..	Alapai	Tixis	Napalemak
Mōhōnōt	S'xamihui	T'shnexan	Sh-kem
Paxaīt	Shtejeje	Tslimi	Shooka
..	Eukeke	..	Ĭlpoi
Ŭngurr	Tipi	Tepu	Trakai
..	Neuk	Tina	Traan
Ŏrŏáxé	Husiec-esini	T'chashin	Trokana
Yaŭke	Sulcuhu	Tch'xime	Smekkai
Ōtsō	Soxton	..	Tsatleia
Ōrō	Sientseuk	..	Trauyeiya
Tōtā	Xeüp	Txeup	Tashxa
Xāŭx	Oshlolomohl	Tspu	Kitspoi
..	Ohuox	..	K'matsol
Yupixa	Axemai	..	K'hanhuat
Kiit	Ahpa	..	Traamah
Ahū-nŭn	Ekeipe	..	Tahxam
Paitxoarr	Axa	Taxa	Xakeia
Toŭarr	Yah	Tslehui	Tatoiyen
Atatax	Hekiampuin	..	Natrikan
Tomēarr	Huot	..	Quatai
Ngoroite	Eheye	H'lmono	Lŭăh
Kobatso	Tupneesh	Tschuilmono	Sketana
Tokor	Ehnek	Tasiyuhl	Letse

IV. English.	Pima.	San Diego.	San Juan Capistrano.
Father	Niook	Mānallĕ	Neneh
Mother	Intui	Patālle	Neyoh
Brave	Tiuot	Kunemei	Shehuŭshuit
Strong	..	..	..
Bad	Mūmkō	Xanō	..
Good	Skukit	Xaṉ	..
Great	Vŏhŏvākuifch	Quatai	Ahūūloot
Small	..	Illmōm	Elūhmal
Much	..	..	..
Little	..	..	..
Head	Nemŏh	Xellta	Tchumyuh
Heart	Īpŏtŭk	Yatchick	Noshun
Hand	Noh	Ĕshall	Poma
Ear	Nāānk	Xiamall	Panakwn
Friend	..	Kunehuaia	Nĕ-hueh-lo
Enemy	..	Axua	Nāāquañi

[No attempt has been made to reduce these vocabularies to the system of orthography usually followed in this work, as it could not have been done correctly without oral communication. Dr. Scouler writes rapidly, and many of his letters are very doubtful; but Dr. Coulter's, though clearly written, is more embarrassing, as he evidently follows an unexplained system of his own: had he adhered to the Spanish orthography, his words might have been easily expressed according to that here adopted. His *x* is our *kh*.—ED.]

XVIII.—*Notes on the Geography of the Columbia River.* By the late Dr. GAIRDNER, M.D. Communicated by his Mother, Mrs. GAIRDNER, of Edinburgh.

[The author, whose scientific zeal and ability are so honourably evidenced by these notes made under the pressure of professional engagements and declining health, was stationed for eleven months at Fort Vancouver on the Columbia River, and subsequently passed eight months in the Sandwich Isles.—ED.]

Vancouver, January, 1835.—We have been lately informed that a large river, called by the natives Skeena, discharges itself into the sea at Port Essington (in 54° 25′ N.), on the N.W. coast. Now, from a letter just received from Mr. S. M'Gillivray (chief trader), this is probably the outlet of Simpson's River, in N. Cale-

San Gabriel.	Santa Barbara.	San Luis Obispo.	San Antonio.
Amak	Kokonosh	Sapi	Tele
Aŭkŏ	Xoninash	Tuyu	Epjo
Ītako	Axauishash	..	Xaialhua
Huuka	..	..	Kmopax
Chaĭtĕ	..	Tsohuis	Xomo
..	..	Ts'yunon	Kĭtsep
Yo-oite	..	..	Katcha
Tsinuch	..	..	Skitano
Aye-oin	..	Tsexu	Xaiya
..	..	Tsihuisnin	Shomo
Ăpuan	..	P'sho	Traako
Ashūn	..	Noxop	Aahuu
Aman	..	Nupu	Menan
Ananax	..	P'ta	Tishokolo
Niye-hiya	..	Tsaxsi	Tienxa
Nikait	..	Tsinayihlmu	Trinaihl

donia; for he mentions that a feast, lately held by the carriers on the latter river, was attended by an Indian chief from the neighbourhood of Fort Simpson, who said that he came from a place on the coast called Skeena. If such be the case, Simpson's River must tend to the southward for the space of 78 miles of latitude, with about 10 of longitude of westing.

We have been also informed by one of the clerks of a Rivière de Sel, about 60 miles above Henry's Forks, to the S., where are little fumeroles* in the ground, with deposits of sulphur, and incrustations of common salt in the prairie.

Walla-walla (in 46° N.), *June.*—We here got some details of the geography of Snake River. It is distant 4 stages for loaded horses (about 15 miles each); 64 miles from Henry's Forks to the American Falls. About 20 miles below which commence the great falls of Snake River, which continue for about 80 miles: about 15 miles below the end of them are the Salmon Falls and the mouth of Sickly River, on right bank. From Sickly River there are 13 stages, or 195 miles, following the course of the great river to Powder River; 64 miles from Powder River to Great Nizpere's Plains; 45 miles to Clear Water Forks. Salmon is found above Salmon Falls, which are low, like the Columbia

* Crevices whence smoke issues.—Ed.

Chutes, but are not found above the Dalles (Slabs); so that it is supposed that the progress of the shoals is interrupted by some falls, for during the whole 80 miles of these Dalles the river is inaccessible from the precipices which form its channel.

The main breadth of Snake River, between Henry's Forks and American Falls, is about half the breadth of the Columbia at Walla-walla; that is, about 250 yards. Above Henry's Forks, the main or S. branch proceeds to the S. end of the Three Tétons (Paps), from which it turns off W. and S.W., and is still of a great size. There is a large boiling-spring near the Arrowstone River, at the N. fork of Flat-head River; another in Big Hole, on the Missouri, about a day's march from the heads of Bitter-Root River; and a third, hotter than either of the other two, on Ben or White River.

We rode to the Snake River Forks, about 10 miles from the fort. Snake River, at its junction with the Columbia, is not half the breadth of the latter, being about 200 yards. There are villages of Pelouches* at the mouth of Snake River. The country, for the whole way to the forks, is the same sandy plain as round Fort Walla-walla. In descending Snake River, from Clear-Water Forks to Salmon River Forks, the distance is from 75 to 80 miles; from the latter to Powder River 30; from thence to Burnt River 30.

June 30th.—We started from the fort, at 11 A.M., for the Grande Ronde. We reached the banks of the Walla-walla River, just at foot of Blue Mountains, at 6 P.M., and encamped at the clump of poplars (Taille des Liards). Our general course was E.S.E. magnetic, or S.E. by E. true meridian, and our distance about 21 miles. The first half of the way consisted of undulating hills of sand, marl and gravel, after which an extensive plain of strong soil extends to the foot of the Blue Mountains. Eyakema Mountain bore from our camp N. 80° W. (magnetic).

July 1st.—We started at 8 A.M., and immediately commenced the ascent of the Blue Mountains, which was very gradual. At 2 P.M. reached the summit, which is a table-land covered with snow or consisting of swamps, from which the rivers rise. The profile of these mountains is tabular, as seen from a distance. Pine-woods cover only the very summit of the mountains, there being none on the side, except a few scattered trees in the tops of the ravines. The sides of these hills are covered with a short carpet of grass and a beautiful variety of flowers, the most conspicuous of which were sun-flowers and yellow lupins; near the summit, and lower down, a large pink liliaceous flower. Snow still remained in large patches in the woods. We encamped on

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* Polonches? (see p. 256).—ED.

the edge of a swamp on the E. side of the summit, with patches of snow all round.

2nd.—We started at 7 A.M., and made a course about S.E. by E. (magnetic) till 2 P.M., when we encamped on a little stream in hills at the N.E. end of Grande Ronde.* I should estimate, by guess, the descent on this side of the Blue Mountains to be about half the ascent on the opposite side. We met with more snow lower down on this side than on the other. This end of Grande Ronde consists of undulating prairie, covered with fine green herbage and clumps of pines. On the descent we had a fine view of mountains bounding Grande Ronde on the S.E. side and S.W. end: the former are higher than the Blue Mountains, their ridge, being quite covered with snow; but those at the S.W. end are the highest of all, rising into peaks, at the heads of Day's River and Powder River, covered with what I should think perpetual snow. The Indians here eat the inner bark of two species of pine, Nos. 1 and 2; the women peeling it off very dexterously by thrusting a long stick between the bark and the wood.

Grande Ronde has a general direction of N.N.E. and S.S.W. (magnetic), or N.E. by E. and S.W. by W. (true). The snowy mountains at the head of Day's River, and S.W. end of Grande Ronde, bore from the road across the mountains S. by E. (magnetic). The strata seen had a direction N. 50° W., and dip N.E. 25° on top of the Blue Mountains, in the midst of the snow.

3rd.—We started at 8 A.M., and at 9 reached N.E. end of the Grande Ronde, which is an extensive plain, surrounded by hills and covered with green herbage; through the middle of which runs, towards N.E., the Muddy River, which is joined by several feeders from bounding hills. At noon we reached the camp of the Rayouse and Walla-walla Indians, who had come hither to trade in horses with the Snake Indians. It consisted of twelve large mat-lodges, covered with boughs, each about 50 feet long. We pitched our camp alongside of the Indians. The plain had a very lovely appearance; more than a thousand horses were running about, and the Indians galloping to and fro.

We rode to see Indian women digging kamoss, about 5 miles S.W. of the camp, in a swamp at the foot of the hills. It is very laborious work; each woman, before midday, having dug up two large bags, of more than a bushel each (90 lbs.).

4th.—We remarked that the patches of snow on the hills on the N.W. side of the Grande Ronde were not more than 300 or 400 feet above the level of the plain. We rode nearly across the Grande Ronde, and found that it is by no means level, but in-

* Gd, Road (J. Arrowsmith's map, 1834).—ED.

clines to the S.E. On this account, the central river, which drains it, runs almost close to the foot of the S.E. bounding mountains, and receives almost all its feeders on the left bank. I was much pleased with this trip to the Grande Ronde, and only regret that want of health and instruments prevented its being made available for scientific purposes.

I noted down the essential characters and sex of the species of pines observed in the course of this journey:—

1. Pinus conis obovatis, squamis apice truncatis, spina brevi armatis, ad basin coni directis, linearibus, sessisilibus. Fol. binis ternatisve, glaucis, triquetris, 4 pollic long.
2. P. conis brevi-cylindricis, squamis linearibus apice truncatis, spina debili longâ, ad basin coni directis, sessilibus. Fol. binis triquetris virid. 2 pollic. long. Arbor lichene nigro eduli capilloso vestitus.
3. P. conis ovatis, squamis ovalibus, bractea linguata sub squamis; breviter pedunculatis. Fasciculo foliorum multifolioso; foliolis ½ unc. long. virid. sulcatis. Arbor magn.
4. Abies.—A. foliis tetragonis, apice spinoso-secundis. Conis?
5. A.—Canadensis balsamea? Cortice breviter-vesiculato. Fol. apice rotundatis non secundis, planis. Conis?
6. A. Foliis secundis, latis, apice rotundatis, subtus glaucis. Conis?
7. A. Douglassii. A. conis bracteat. bract. 3 lingua.

After my departure from the Grande Ronde I learned that there is a thermal spring there: it forms a large basin, in the middle of which the gas bubbles up. It is so hot that the men who filled the bottle could not wade in to any distance from the edge.

Vancouver, August 3rd.—I had some conversation with N. Wyatts (fur-trader), who is at the fort, about some hot-springs which he had visited on a fork of the Falls River: they are about 30 miles from the Columbia. They are hot enough to cook meat—their temperature 191° Fahrenheit! They taste of sulphur and iron, and deposit a white incrustation on the rocks (calcareous?). Opposite to these springs, 24 miles down the stream, he discovered two fossil thigh-bones, resembling those of an elk, embedded in sandstone lying under basalt. There are large beds of pumice on the Falls River. The largest masses of obsidian he has yet seen in his travels are in the vicinity of Portneuf* River: some would weigh a ton, and are loose. He has seen none *in situ*. There are beds of bituminous coal, in considerable quantity, on the E. declivity of the Rocky Mountains, on Stinking River, a tributary of Wind River, which falls into Bighouse River, a tributary of Yellow-stone River.

* Poit Neuf (J. Arrowsmith, 1834).

Notes on the Indian Tribes on the Upper and Lower Columbia.

List of the nations on the lower part of the Columbia, and along the sea-coast southwards, from Michel la Framboise:—

Language	No.	Nation	Location
I. Saho Latak Language.	1.	*Katlagakya.*	From the Cascades to Vancouver, along the river.
	2.	*Mamnit.*	In Multnomah Island, now extinct, on the side next the Columbia.
	3.	*Katlaminimim.*	In Multnomah, all on the side next Wallamat, the lower branch being extinct.
	4.	*Wakamass.*	From Deer's Isle to the lower branch of the Wallamat, at its mouth; Kesho their chief.
	5.	*Katlaportl.*	Along a river of the same name, to the mouth and right bank of the Columbia, for five miles above its mouth.
	6.	*Klàkalama.*	On the banks of a little river on the right bank of Columbia, between No. 5 and the Towalitch River.
	7.	*Scamysty.*	At the mouth of the Towalitch River.
	8.	*Ketlakaniaks.*	At Oak Point, on the left bank of the Columbia. Formerly Nos. 7 and 8 formed one nation, under the name of Kolnit; but 7 separated from 8 for want of room at Oak Point.
	9.	*Wakaikum.*	On the right bank of the Columbia; on a small stream, called Cadet River, a good way below Oak Point, between it and Katlamak.
	10.	*Katlamak.*	On the left bank of the Columbia; on a river of same name, running from the interior.
	11.	*Awakat.*	At Fort George. This is the name of a place, not of a nation; many nations come together there for berries, &c.
II. Chenook Language.	12.	*Klakhelnk.*	On Clatsop Point; commonly called Clatsops.
	13.	*Chenook.*	A nation on Baker's Bay.
III. Chachalis Language.	14.	*Chachelis.*	On Gray's Bay; at the entrance of the river.
	15.	*Qyan.*	On the North Point of Gray's Bay.
IV.	16.	*Qweenylt.*	On a river of same name.
V. Killimoux Language.	17.	*Naèlim.*	On a river on the sea-coast, 30 miles S. of Clatsop Point.
	18.	*Nikaas.*	On the sea-coast, 30 miles S. of No. 17.
	19.	*Kowai.*	On the sea-coast, S. of No. 18.
	20.	*Neselitch.*	On the sea-coast, S. of No. 19.
VI.	21.	*Tacòon.*	On the sea-coast, S. of No. 20.
	22.	*Aleya.*	On the sea-coast, S. of No. 21.
VII.	23.	*Sayonstla.*	On the coast, S. of No. 22.
	24.	*Kiliwatsal.*	On the coast, S. of No. 23.

VIII.	25.	*Kaons.*	On the coast, S. of No. 24.
	26.	*Godamyon.*	On the coast, S. of No. 25. (Siquitchib.)
IX.	27.	*Stotonia.*	On the coast, S. of No. 26, at the mouth of the River des Coquins.
SEHALATAK.	28.	*Katlawewalla.*	At the Falls of Wallamat.
	29.	*Klakimass.*	On river of that name.
X.	30.	*Clamet.*	On the upper part of the river, and 60 miles below the lake so named.
XI.	31.	*Sasty.*	On a river of same name to W. of No. 30.

The River Stotonia is 60 miles N. of Clamet River, at its entrance into the sea. Its source is on the N. side of the Clamet Mountain, and that of the Clamet River on the S. side of the mountain. Sasty is between the Clamet and Buenaventura River. There are two snowy peaks between the mountains Vancouver and Clamet.

	32.	*Isallcet.*	On the Umqua River, between No. 24, which is at its mouth, and the first rapids.
	33.	*Umqua.*	On a river of that name, above No. 32, towards the interior.

Detached Notes on the tribes about Fort Walla-walla, in the interior, situated at the confluence of the River Walla-walla with the Columbia, a little above the point where the Columbia changes its course from W. to S.* :—

"The Indians here are a quiet, sedate race compared with the Chenooks and Sehalataks, and have a more noble and manly aspect. They are generally powerful men, at least 6 feet high. None of the women come about the fort."

"I endeavoured to obtain from the interpreter some explanation of the appellations given to the different nations on the Columbia, such as Nez-percés, Flat-heads, Black-feet, &c.; but no one knows the origin of these terms, as their own names, Silish, Shahaptenish, have no signification of the kind. The Nez-percés are divided into two classes, the Nez-percés proper, who inhabit the mountains, and the Polonches, who inhabit the plain country about the mouth of Snake River. The nations of the plain on the other side of the Rocky Mountains are celebrated for their warlike incursions on the Black-feet, Big-bellies, Ciriés, and Piegans or Blood Indians on this side. Of these Indians, the last are the most numerous. The Rayouse Indians, of whom I have now seen several, are quite a different race of men from the Walla-wallas; they are stouter, and more athletic, being generally 6 feet high. They have a dignity in their gait, and a gravity in their demeanour, not possessed by the latter. They also consider it as a degradation to marry the Walla-walla women, although

* Dr. M. Gairdner had gone up from Vancouver to the Fort for his health.

the Walla-walla men make frequent marriages with the Rayouse women. The Rayouse do not muster more than 78 men; the Walla-wallas, including women and children, about 200."

"*May*, 1835.—Two Snake Indians arrived at the Fort. They have not the tall stature and noble air of the Rayouse. The Snake tribe, who come to the Grande Ronde for trade, muster 1000 to 1200 strong, and are not now as formerly, merely armed with bows, but have obtained, by theft and trade with the Americans, an abundant supply of arms and ammunition. Though there are about 50 Indians round the Fort, with everything open to them, and nobody in it but Pambroon, H. B. C.'s clerk, the interpreter, one or two boys and myself, all is quiet. In the evening the Indians say their prayers under one of the bastions, and have the same religious ceremonies as the Walla-wallas."

"I attended the religious services of the Walla-walla Indians. The whole tribe, who are here at present, men, women and children, to the number of about 200, were assembled in their craal, squatted on their hams; the chief and chief men at the head arranged in a circle: these last officiated: towards this circle the rest of the assembly were turned, arranged in regular ranks, very similar to a European congregation. The service began by the chief's making a short address, in a low tone, which was repeated by a man on his left hand, in short sentences, as they were uttered by the chief. This was followed by a prayer pronounced by the chief standing, the rest kneeling. At certain intervals there was a pause, when all present gave a simultaneous groan. After the prayer there were fifteen hymns, in which the whole congregation joined: these hymns were begun by five or six of the men in the circle, who acted as leaders of the choir: during this hymn, all were kneeling, and kept moving their arms up and down, as if to aid in keeping time. The airs were simple, resembling the monotonous Indian song which I have heard them sing while paddling their canoes. Each was somewhat different from the other. All kept good time, and there were no discordant voices. The hymns were succeeded by a prayer, as at first, and then the service ended. My ignorance of the language prevented me from observing much of this service; but I was struck with the earnestness and reverence of the whole assembly. All eyes were cast down to the ground; and I did not see one turned towards us, who must have been objects of curiosity, as white chiefs and strangers. It is about five years since these things found their way among the Indians of the Upper Columbia. All were dressed in their best clothes, and they had hoisted a union-jack outside the lodge. The whole lasted about three-quarters of an hour."

APPENDIX.

Geographical and Meteorological Observations, by the Chev.

Day.	Place of Observation.	State of the Atmosphere.	Direction of the Wind. 12 — 4	4 — 8	8 — 12	12 — 4	4 — 8	8 — 12
1838.	° ′ ° ″		Fathoms.	Fathoms.				
16 XI.	29 51 N. 17 9 W.	Horizon gloomy; dull gleams of sun.	S.W.^{4}	S.W.^{3}	S.W.½S.^{4}	S.W.^{4}	S.W.^{3}	S S.W.^{3}
17	30 23 18 40	Sky overcast; shower of rain; gusts of wind.	S.W.^{2}	S.W.^{4}	W.S.W.^{5}	W.S.W.^{5}	W.^{3}	W S.W.^{2}
18	29 27 18 8	Sky bright and clear . .	W.S.W.^{3}	S.W.^{1}	S.W.^{2}	W.S.W.^{5}	W.^{3}	W.^{2}
19	28 .. 18 0	Bright, with a few heaped clouds.*	W.N.W.½	W.N.W.^{1}	N.^{2}	N.E.^{3}	N.E.^{4} / N.N.W.	N W.^{2} / W.N.W.
20	27 38 18	——— Towards evening, air sultry and oppressive.	N.E.^{2}	N.E.^{2}	N.E.^{1}	N N.W.$^{1\frac{1}{2}}$		
21	27 30 18 8	Sun rose from narrow bright horizon below a rectilineal mass of heavy clouds.			S.S.W.$^{1\frac{1}{2}}$	S.W.$^{1\frac{1}{2}}$	N.N.W.^{3}	N.^{2}
22	26 52 18 53	Morning, sky overcast; about noon light on the horizon in N W., with heavy heaped clouds* S S.E.	N.^{1}	N W.$^{1\frac{1}{2}}$	N.W.^{1}	N.N.W.$^{1\frac{1}{2}}$	N.N.W.^{2}	N.N.W.^{1}
23	26 31 19 29	Sky overcast, with gleams of sun.	N.N.W.^{2}	N.N.W.^{2}	N.N.W.^{1}	N.N.W.$^{1\frac{1}{2}}$	N.N.W.$^{3\frac{1}{2}}$	N.^{1} / N.N.W. / N.E.
24	26 03 20 43	——— evening rainy clouds from S.E. to W. through whole	N.E.^{3}	N.E.^{3}	N.E.^{3} / E. / E.S.E.	E.^{3}	E.^{5}	E.^{5}
25	25 07 22 39	Gloomy sunrise; from N.; evening, 9h. bright showers† in S. slight	E.^{6}	E N.E.$^{4\frac{1}{2}}$	N.½E.$^{5\frac{1}{2}}$	E.^{5}	E.$^{5\frac{1}{2}}$	E.$^{5\frac{1}{2}}$
26	24 17 25 20	Alternate gleams of sun and wet fog.§	E E.N.E.^{5}	E.$^{5\frac{1}{2}}$ / E.S.E.	E.$^{5\frac{1}{2}}$ / E.S.E.	E.$^{6\frac{1}{2}}$	E ^{7}	E.^{6}
27	23 29 27 59	Morning, dull; then overcast; gleams of sun, evening, fiery sunset.	E.$^{6\frac{1}{2}}$	E.^{6}	E.$^{6\frac{1}{2}}$	E.^{6}	E.^{6}	E $^{5\frac{1}{2}}$
28	22 48 30 16	. . .	$^{5\frac{1}{2}}$	^{4}	^{4}	^{5}	$^{5\frac{1}{2}}$	$^{6\frac{1}{2}}$
29	21 58 32 19	Morning, slight showers† in N. and E.; *brighter sky, with heaped clouds.*	E.	E.	E.N.E.	E.	E.	E. / E.N.E.
30	21 17 36 25	Bright day, with fleecy‡ clouds; at noon wet fog,§ from thin misty clouds.	E N.E.	E.N.E.	E S.E.	E S.E.	E.S.E.	E.
1 XII.	20 27 39 05	Clear sky, with fleecy‡ clouds.	E.^{6}	E ½S.^{7}	E.½S.^{7}	E.S.E.^{5}	E.S.E.^{6}	E.S.E.^{7}
2	19 49 42 15	——— Towards 1 P.M. white stormy clouds, with short spurts of rain.	E S E.^{7}	E.S.E $^{7\frac{1}{2}}$	E.S.E.^{7}	E.S.E.$^{6\frac{1}{2}}$	E S E.$^{6\frac{1}{2}}$	E.S E.^{7}
3	19 03 44 49	Bright, with pale sky; and in afternoon fleecy‡ clouds.	E S.E.^{7}	E.S.E ^{6}	E S E.$^{5\frac{1}{2}}$	E.$^{5\frac{1}{2}}$	E.^{6}	E.S.E.^{6}
4	17 55 47 11	. . .	^{6}	$^{6\frac{1}{2}}$	^{6}	^{5}	$^{5\frac{1}{2}}$	E.$^{5\frac{1}{2}}$
5	17 16 48 09	Clear light blue and cloudless sky.	E.^{5}	E.^{4}	E.^{5}	E ^{3}	E.^{4}	E.$^{4\frac{1}{2}}$
6	16 41 50 51	Sun rose from a misty horizon; a few scattered heaped clouds;* in afternoon, storm in the N., sun set in a pale grey heaped cloud.*	$^{4\frac{1}{2}}$	^{5}	^{4}	^{3}	^{3}	$^{3\frac{1}{2}}$
7	16 19 52 12	Sun rose and set with rainy clouds; morning, stormy, clouds in E.; rest of day, blue sky with few heaped clouds.*	$^{2\frac{1}{2}}$	$^{3\frac{1}{2}}$	$^{4\frac{1}{2}}$	$^{4\frac{1}{2}}$	^{4}	N E.^{4} / N.

* See p. 97. * Haufwolken-Cumulus? † Strichregen.

...MAN. FRIEDERICHSTHAL, *from Nov.* 1838, *to Jan.* 1839.

Colour of the Sea.	Course of Waves.		Thermometrical Observations, Celsius or Centigrade. 6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	
. . .	W.	Air.	..	..	21·7	..	..	..	22·4	..	..	..	..	..	..	..	..	22·6		
		Sea.	..	..	21·0	..	..	..	21·7	..	..	..	..	..	..	..	..	22·2		
. . .	W.	Air.	..	..	22·3	..	..	..	23·0	..	..	..	..	..	..	..	..	22·4	..	In evening lightning in E.
		Sea.	..	..	21·6	..	..	..	22·2	..	..	..	..	..	..	..	..	21·2		
. . .	N.W.	Air	..	..	22·4	..	..	..	23·6	..	..	..	..	..	..	..	..	21·9		
		Sea.	..	..	22·0	..	..	..	21·8											
. . .		Air.	..	..	21·8	..	..	..	22·3	..	..	..	..	..	..	..	..	21·5		
		Sea.	..	..	21·3	..	..	..	21·4											
. . .	[illegible]	Air.	..	..	22·4	..	..	..	[illegible]	..	..	..	..	..	..	..	..	22·4	..	Current S.S.W.
		Sea.	..	..	22·4	..	..	..	[illegible]											
. . .	S.S.W.	Air.	..	..	22·0	..	..	..	23·8	..	..	..	..	..	..	..	..	21·4	..	
	N.N.W.	Sea.	..	..	22·6	..	..	..	22·0	..	..	..	..	..	..	..	..	22·4		
ark pearly grey.	N.N.W.	Air.	..	..	21·1	..	..	..	22·3	..	..	..	..	..	..	..	..	20·7	..	
		Sea.	..	..	22·3	..	..	..	22·6	..	..	..	..	..	..	..	..	22·4		
orning, greyish ue; later, pearly ey.	W.S.W.	Air.	..	..	21·6	..	..	..	22·9	..	..	..	..	..	..	..	..	22·4		
	W.N.W.	Sea	..	..	22 8	..	..	..	22·9	..	..	..	..	..	..	..	..	21·4		
Dark grey.	W.N.W.	Air.	..	..	23·6	..	..	..	24·3	..	..	..	..	..	..	..	..	22·0		
	E.N.E.	Sea.	..	..	22 7	..	..	..	23·0	..	..	..	..	..	..	..	..	22·5		
. . .	N.N.E.	Air.	..	..	23·0	..	..	...	23·5	..	..	..	..	..	..	..	..	22·1		
		Sea.	..	..	22·9	..	..	..	23·0	..	..	..	..	..	..	..	..	22·4		
Steel grey.	E.N.E.	Air	..	.	22·6	..	..	..	22·8	..	..	..	..	..	..	..	..	22 9		
		Sea.	.	..	23·6	..	..	..	23 8	..	..	..	..	..	..	..	..	22·4		
Noon, light pearly grey; dark grey.	. .	Air.	..	.	22·9	..	..	..	23·8	..	..	..	..	..	..	..	..	23·6		
		Sea.	..	..	23·1	..	..	..	23·8	..	..	..	..	..	..	..	..	22·1		
Pearly grey.	. .	Air.	..	..	25·0	..	..	..	25·0	..	..	..	..	..	..	..	..	24·0		
		Sea.	..	..	23·6	..	..	..	23·8	..	..	..	..	..	..	..	..	23·6		
Morning, pearly grey; later, dark blue.	. .	Air.	..	..	22·9	..	..	..	24·1	..	..	..	..	..	..	..	..	24·1		
		Sea.	..	..	24·0	..	..	..	24·0	..	..	..	..	..	..	..	..	22·9		
Morning, dark; later, light blue.	. .	Air	..	..	24·6	..	..	..	25·4	..	..	..	..	..	..	..	..	24·5		
		Sea.	..	..	25·0	..	..	..	25·0	..	..	..	..	..	..	..	..	24·6		
Azure.	. .	Air.	..	..	25·0	..	..	..	25 9	..	..	..	..	..	..	..	..	24·9		
		Sea.	..	..	25·0	..	..	..	25·0	..	..	..	..	..	..	..	..	23·4		
. . .	. .	Air.	..	.	..	25·9	26·4	27·4	26·9	27·1	26·1	26·0	25·4	25·4	..	..	..	25·0		
		Sea.	..	..	25 0	..	..	..	..	25·1	..	..	..	..	.	..	..	25·0		
. . .	. .	Air.	..	..	..	26·4	26·2	26·5	27·3	26·2	..	25·5	25·4	25·0	..	..	..	24·6		
		Sea.	..	..	25·4	..	..	..	..	..	..	25·2	..	..	..	..	..	25·1		
. . .	. .	Air	..	..	25·4	26·6	27·4	27·3	26·9	26·7	26·2	26·2	25·8	..	..	..	..	25·0		
		Sea.	..	..	25·6	..	..	..	25·6	..	..	..	..	..	..	..	..	24·0		
. . .	. .	Air.	..	..	25·7	26·2	26·8	27·2	26·9	27·4	26·8	26·4	26·2	..	..	..	..	25·0		
		Sea	..	..	25·7	..	..	..	..	25·5	..	..	..	..	..	..	..	24·8		
. . .	. .	Air.	..	..	..	27·4	..	28·2	28·1	27·9	25·5	26·1	26·1	..	..	..	..	25·1	..	Evening, lightning in N. and N.N.E at the same time; stormy clouds seen from N.E. to S.W.
		Sea.	.	..	26·0	..	..	..	..	26·2	..	..	..	..	..	..	..	24 6		
. . .	N.	Air.	..	..	26·0	26·1	26·6	..	26·2	...	26·0	..	26·0	..	..	..	..	25·0		
		Sea.	..	..	25·2	..	..	..	..	..	26·2	..	..	..	..	..	..	25·0		

‡ Stookenwolken. § Nebel. regen.

Day.	Place of Observation.	State of the Atmosphere.	Direction of the Wind.					
			12 — 4	4 — 8	8 — 12	12 — 4	4 — 8	8 — 12
	° ′ ° ″							
1838. 8 XII	16 12N. 53 52W	Bright day, with few heaped clouds,* 8h. A.M. spurts of wind from N., with stormy clouds and a little rain; 9h. P.M. slight rain from N.	N.E.$^{3\frac{1}{2}}$ / N.	N.$^{5\frac{1}{2}}$	N.E.^{4} / E.	E.N.E.^{5}	E.$^{5\frac{1}{2}}$	E.N.E.^{5}
9	16 22 56 09	Sunrise, fiery, with rainy clouds; line of clouds† from N.E. to S.W., with heavy showers; 5h. P.M. storm in N. and S., with rain; sun set in stormy clouds.	E.N.E.^{5}	E.N.E.^{6}	E.N.E.$^{6\frac{1}{2}}$	E.^{6}	E.^{6}	E ^{6}
10	16 18 58 43	Bright day, with a few heaped clouds;* in morning a slight shower.	E.[illegible]	E.^{7}	E $^{6\frac{1}{2}}$	E.[illegible]	E.^{7}	E.^{7}
11	16 17 61 39	At night alternate showers; the same throughout the day from the E. with gusts of wind; at 4½h. and 8½h. P.M. heavy rain.	7½	7½	8	7	[illegible]	8
12	16 17	At night alternate showers; A.M. stormy clouds in E. and N.; P.M. heavy rain and a gale of wind from the E., horizon overcast all round.	8½	9½	8	9	8½	7
13	Between the Isles of Antigua and Montserrat. In evening, St. Eustachia on the E.	Bright day, with passing clouds;* showers from N. in morning, noon, and evening.	7½	7	6½	7½	8½	8½
14	Morning, to the E. of Isles of San Juan and St. Thomas, & at 1 o'clock P.M. in the Harbour of St. Thomas	Bright day, with a few heaped clouds.	7½	8½	8½	9	. .	. .
15—30	Stay at St. Thomas . .	Showers, with gusts of wind from the E. almost daily; particularly in the afternoon, clouds formed very rapidly.						
30	On E. of the Isle of Vico 18 11 67 24	Day bright, with few cumulating clouds late in evening, and at night a shower; sunset cloudy.	. .	. .	. .	S E.	E N.E^5	E.N.E.^{5}
31	17 27 69 39	Sunrise cloudy; day bright, with fleecy clouds; sun set with light grey stormy clouds; 7h. evening, showers in N.E. and S.W.	E.N.E.^{6}	E.N.E.^{6}	E.N.E.^{5}	E N.E.^{5}	E.N.E.^{5}	E.N.E.*
1839. 1 I.	16 42 71 40	Bright sunny day, with feathery clouds.	6		4	5	5	4
2	15 55 73 7	At noon, partial showers from thin misty clouds; sunset fiery.	3	3	3½	8	2	2½
3	15 41 71 16	Morning, stormy clouds in N.E.; noon and 3h. P.M. showers; evening, storm in N.	3	8	4½	5	4½	E.S.E.^{4}

* Haufwölken-Cumulus.

Colour of the Sea.	Course of Waves.		Thermometrical Observations, Celsius or Centigrade.																	
			6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	
Dark blue.	. .	Air.	..	..	23·4	..	..	24·4	24·2	24·5	25·4	25·7	25·8	25·0	..	..	..	24·3	..	Exposed to the wind, therm. morning, 8h. 22·2°; even. 9h. 24·8°.
		Sea.	..	..	25·6	..	..	..	..	25·4	..	..	..	.	..	..	..	24·2	..	Evening, 8h., lightning in E.
Pearl grey.	. .	Air.	..	..	24·2	..	26·2	26·3	26·4	23·0	26·1	..	..	26·0	..	..	..	[illegible]·4	..	Evening, 7h., meteor of the magnitude of a star, moving horizontally from E. towards W., vanished in the atmosphere.
		Sea.	..	..	24·9	..	..	..	..	25·5	.	..	..	..	..	..	..	24·9		
Dark blue.	. .	Air.	..	..	26·1	25·4	27·2	[illegible]	[illegible]	26·6	..	27·4	26·6	..	..	..	..	26·1	..	Evening, 7½h., in N.E. rainy cloud, at the point of which appeared a ball of fire half the size of the moon: extinguished after 2 sec.
		Sea.	..	..	25·5	..	..	[illegible]	[illegible]	26·0	..	..	..	..	..	..	..	25·5		
Dark grey.	E.	Air.	..	..	27 0	27·4	..	27·4	29·5	27·6	..	27·2	..	..	..	..	..	25·0	..	Many meteors like that of the 9th visible.
..		Sea.	..	..	26·1	..	..	..	..	26·1	..	..	..	..	..	..	..	25·7		
. . .	N.E.	Air.	..	..	26·7	27.3	28·2	..	27·4	25·0	..	26·6	..	..	..	..	..	25·1	..	Evening and night, strong flashes of lightning in S.
		Sea.	..	..	26·1	..	..	..	..	26·6	..	..	..	..	..	..	..	25·4		
Dark blue.	. .	Air.	.	..	26·2	27·2	..	..	25·0	26·1	25·6	26·2	..	..	..	..	..	25·0		
		Sea.	..	..	25·6	..	..	..	..	26·9	..	..	..	..	..	..	..	26·9		
. . .	. .	Air.	..	..	..	..	27·8	27·6	27·4	..	..	..	..	..	..	..	..	26·1	..	At night current from E. towards W.
		Sea.	..	..	26·7															
. . .	. .	Air.	..	..	..	27·8	..	..	..	..	26·8	..	26·4	..	..	..	25·5			
		Sea.	..	..	..	26·0	..	..	..	..	..	..	..	..	..	..	24·5			
Dark grey.	E.S.E.	Air.	..	..	26·6	26·7	27·0	..	28·1	28·8	29·0	..	27·2	27·3	..	..	26·7			
		Sea.	..	..	26·6	..	.	..	..	27·0	..	..	..	..	..	..	25·8			
Dark blue.	. .	Air.	..	..	27·2	..	27·9	28·4	27·9	27·4	27·0	..	27·0	..	..	..	..	26·0		
		Sea.	..	..	26·7	..	..	..	..	26·3	..	..	..	..	..	..	..	26·6		
Light blue.	. .	Air.	..	..	27·2	..	28·1	29 8	28·7	28·5	..	29·3	27·4	26 9	..	..	..	26·0	..	8h. P.M. lightning in E.
		Sea.	..	..	26·8	..	..	..	..	26·6	..	..	..	..	..	..	..	25·8		
Light grey.	E.	Air.	..	..	27·2	28·0	28·4	..	29·0	28·4	28·0	..	27 0	..	..	..	..	26·7		
		Sea.	..	..	26·2	..	..	..	..	26·9	..	..	..	..	..	..	..	26·8		

† Zugwolk.

Day.	Place of Observation.	State of the Atmosphere.	Direction of the Wind. 12 — 4	4 — 8	8 — 12	12 — 4	4 — 8	8 — 12
1839.	° ′ ° ″							
4 I.	15 03N. 75 43W.	At night, 2h. P.M. heavy rain; morning, stormy clouds in E.*	N.[illegible]	N.E.^{3}	N.E.^{2}	E^{2}	1, 2, 5, 2 E.N.E.	0, 1, 3, 2 E.N.E.
5	14 41 76 31	Cloudy day, showers in the E. and N.; frequent gusts of wind.	E.N.E.^{2}	E.S.E.^{2}	E.S.E.$^{2\frac{1}{4}}$	N.E.$^{3\frac{1}{4}}$ / N.N.E.	N.$^{5\frac{1}{4}}$	N.^{8}
6	13 44 78 58	At night showers; in morning, horizon overcast S. and S.E.; bright day; P.M. rainy clouds in S.W.; evening, rainy clouds in E. and E.N.E.	N.$^{7\frac{1}{4}}$	N.$^{7\frac{1}{4}}$	N.$^{7\frac{1}{4}}$	N.N.E.$^{6\frac{3}{4}}$	N.N.E.^{8}	N.N.E.^{7}
7	12 53 81 39	In the night showers; in morning sky overcast; at 7h., 12¼h., 2¾h., 6¼h., and 8½h., showers; fiery sunset.	N.N.E.^{7}	N.N.E.$^{7\frac{1}{4}}$	N.N.E.^{7}	N.^{6}	N.N.E.$^{7\frac{1}{4}}$	N.N.E.$^{6\frac{1}{2}}$
8	11 27 84 39	In morning sky overcast, then bright, with passing clouds; 11h. showers in N., passing on to W.; in evening sky overcast; gusts of wind.	$6\frac{1}{4}$	$7\frac{1}{2}$	7	$6\frac{1}{2}$	2 By lead 11 fath	$2\frac{1}{2}$ aback. oms 15′.
9	Overnight driver near the mouth of the Colorado.	Sky overcast all day; sudden showers and fog, with strong gusts of wind from all quarters.	N.N.E.^{3}	N. single	N. gusts of	N.N.E. wind.	N.N.E.	E.N.E. N.N.E.
10	10 37 85 9	In night sky overcast; in morning rain on horizon in S.W.W. N.W., with gleams of sun; 3h. P.M. showers from N.; 5h. P.M. from S.	N.N.E.$^{3\frac{1}{4}}$	N.N.E.$^{2\frac{1}{4}}$	2	S.W.^{3}	N.E.^{3}	5, 6, 2, 2 N.E.
11	. .	In night sky overcast, with gusts of wind and showers; after sunrise bright; 9h. showers in E. and W.; at noon, wet fog from S.; in evening, sky overcast	2, 1, 3, 0 N.E.	0, 5, 0, 5 S.W.	3	0, 5, 2, 5 N.E.	3, 3, 2, 3 N.E.	4, 3, 1, 3 N.E.
12	11 11 middle of Grindstone Bay	Morning, sky overcast, with showers in N. and S.; 7h., showers in W.N.W.; 8h., showers in E.; 10h., showers from N.E.; afternoon bright, with cumulus clouds.	N.E.^{4}	N.E.$^{4\frac{1}{2}}$	N.W.^{3}	E.$^{1\frac{1}{2}}$	E.^{2}	E.^{3}

S. Juan de Nicaragua—Mean Temperature

1839.

S. Juan de Nicaragua. 14—20 Jan. Mean height by 11 barometrical observations, 2½ metres (8·2 feet) above the

Acoyapa, Chief Fort of the Province of Chontales. 1 April. „ 2 „ 3 „

* Day, lines of clouds; noon and 3 P.M.; showers.

[M. Friedrichsthal uses Celsius's Centigrade Thermometer, of which 5° = 9° Fahrenheit, commonly used by us; the corresponding altitude of Fahrenheit's scale will be obtained—thus, 26·4 C. × $\frac{9}{5}$ + 32 = 79·52 F.—ED.]

Colour of the Sea.	Course of Waves.		Thermometrical Observations, Celsius or Centigrade.																	
			6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	
Dark blue.	E.N.E.	Air.	..	..	26·7	27·8	28·4	[illegible]	[illegible]	29·3	..	28·6	..	..	..	..	..	26·6		
		Sea.	..	..	26·6	..	..	..	..	27·2	..	..	..	..	..	..	..	26·9		
Greyish blue.	. .	Air.	..	..	27·6	29·2	29·3	29·4	29·2	29·0	..	28·1	27·6	..	..	..	..	26·7		
		Sea.	..	..	27·3	..	..	..	..	27·0	..	..	..	..	..	..	..	27·5		
Dark grey.	N.N.E.	Air.	..	..	26·9	..	..	27·0	..	27·0	26·9	..	27·4	..	..	..	..	26·9		
		Sea.	..	..	26·7	..	..	..	..	26·9	..	..	..	..	..	..	..	26·9		
Dark grey.	N.N.E.	Air.	..	..	25·8	26·9	27·3	..	..	27·2	28·0	26·9	26·2	27·4	..	..	..	26·6	..	6h. P.M. Isle of Kay E.S.E. 1 league to N.
	N N.W.	Sea.	..	..	26·1	..	..		..	26·8	..	..	..	...	..	..	..	26 6		
Dark blue.	E.N.E.	Air.	..	..	27·4	27·6	28·1	[illegible]	26·9	24·6	25·2	24·4	26·0	..	..	..	..	..	..	Noon, Continent visible.
		Sea.	..	..	26·7	..	..	..	..	24·8										
Pale stone green; afternoon, spray yallow.	. .	Air.	..	..	..	24·3	..	..	..	..	25·5	..	..	..	..	..	..	..	.	Current from N. to S. 2,8 knots.
		Sea.	..	..	..	25·6	..	..	..	..	25·6									
Dark grey.	N.N.E.	Air.	..	..	27·5	27·5	..	26·9	24·4	26·8	25·6	26·1	..	..	..	..	..	26·3		
		Sea.	..	..	24·8	..	..	..	..	27·2	..	..	..	..	..	..	..	26·8		
Dark grey; at noon light blue.	. .	Sea.	..	..	26·9	26·2	27·3	28·0	27·2	27·5	26·2	27·4	..	..	..	..	..	27·3		
		Air.	..	..	26·6	..	..	..	..	27·2	..	..	..	..	..	..	..	26·9		
Stone green.	. .	Air.	..	..	24·4	25·5	26·6	26·8	27·5	26·9	..	27·0	..	27·2	..	..	..	25·5	..	Heaving the lead ¼ leg. off St. Juan near the coast 7 fth ; entrance of the port 7 fth.; 250° from land 3 to 4 fath.
		Sea.	..	.	26·4	..	..	..	..	26·6	..	..	..	..	..	..	..	25·5		

0 inches; in interior of the earth, 26·4.

evel of the Atlantic in a favourable state of atmosphere. Sum of the 2 scales 763·6 Mean Barom. Obs., T. 27·7, t. 28·4.

„ Pacific, 11° 28′ N. lat. Boca del Rio Giusala, 763·4 Mean Barom. Obs., T. 26·5, t. 25·7.

vening, rainy sky in S.E. and N.; sunset fiery.

herefore, any given number of degrees of the Centigrade be multiplied by 9, and divided by 5, and 32 be added to the amount, the

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London: Printed by W. Clowes and Sons, Stamford Street.